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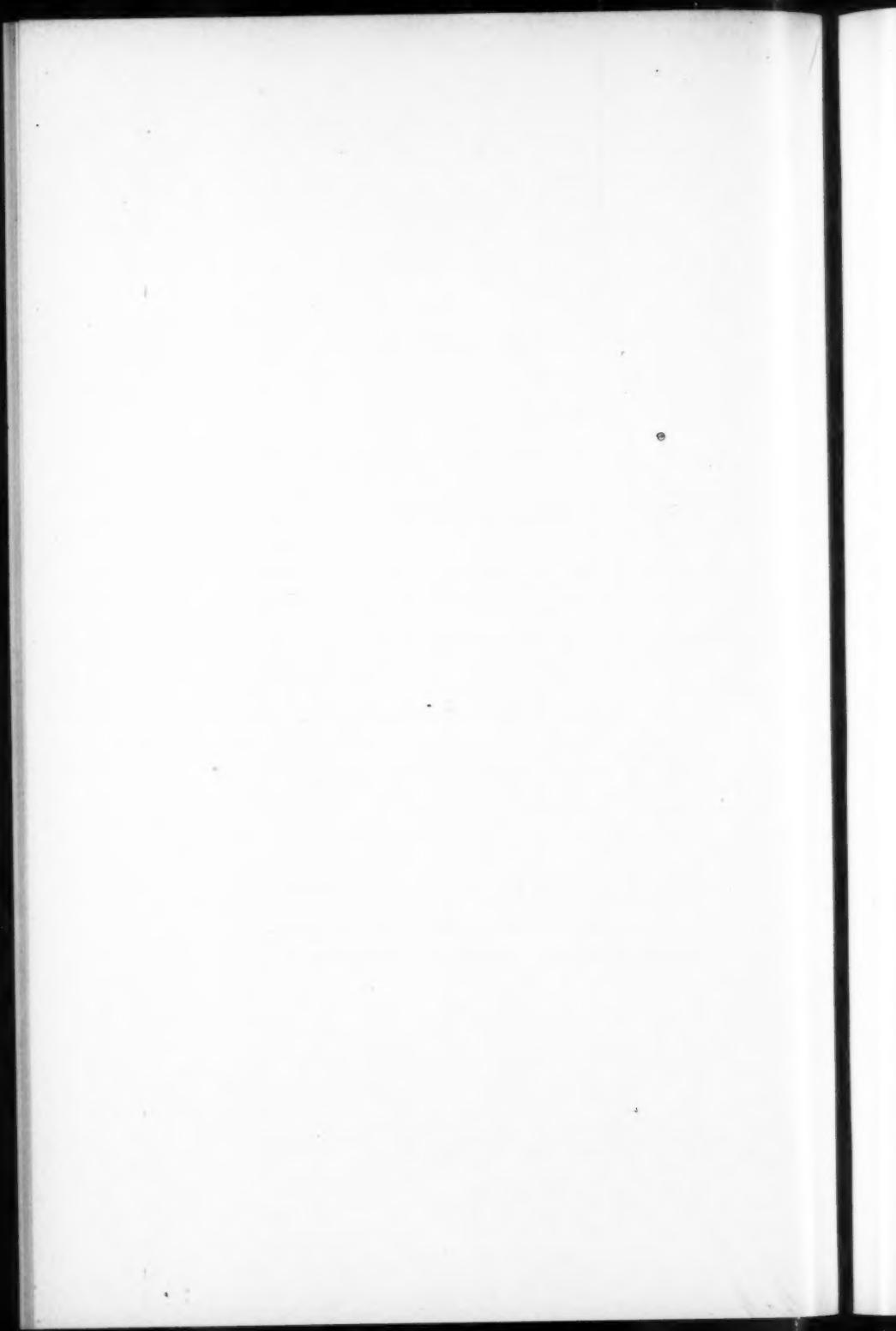
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ETRUSCAN STATUETTE IN THE METROPOLITAN MUSEUM

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ETRUSCAN STATUETTE IN THE METROPOLITAN MUSEUM

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AN ARCHAIC ETRUSCAN STATUETTE

[PLATES III-IV]

MR. J. PIERPONT MORGAN has lately come into the possession of an Etruscan bronze statuette of great importance.¹ From an artistic point of view it easily ranks as one of the finest Etruscan statuettes in existence, and archaeologically it is significant in affording a striking illustration of both the capabilities and the limitations of the Etruscan artist.

The statuette is $11\frac{9}{16}$ in. (29.4 cm.) high, and represents a girl standing erect, with left foot slightly advanced (PLATES III, IV). The right arm is bent forward at the elbow and probably held some object; the left is lowered and is grasping a fold of the drapery. She wears a long, sleeved chiton and a himation, arranged in broad vertical folds and passing from the right shoulder to below the left arm; also laced shoes with upturned, pointed toes, rosette-shaped earrings, a necklace of beads, and a fillet decorated with three rosettes. Her hair is long and hangs down her back in a broad mass, the individual hairs being indicated by incised lines of great delicacy. Ornamental borders are incised both on the himation and the chiton as follows: cross-hatchings on the lower edge of the chiton and along the left side of the himation; cross-hatchings with a row of dots on the upper and lower edges of the himation; a row of dots round the armholes and up both sleeves; zigzag lines and a row of dots on the upper edge of the chiton. Scattered over the surface of the chiton are small punctured designs of triple spirals [S]. The lower corners of the himation end in tassels. The only missing parts are the right hand from

¹ At present on exhibition in the Bronze Room (gallery 12) of the Metropolitan Museum of Art, New York. I am indebted to Mr. Morgan for permission to publish this statuette.

above the wrist, and the left foot. The figure is cast solid and is covered with a smooth olive-green patina, but the surface is corroded in places, especially on the face.

The period to which the statuette belongs can be fixed without difficulty as the latter part of the sixth century B.C., both from its general style and from its resemblance as regards attitude and dress to the "Acropolis maidens" and similar marble, bronze, and terracotta figures of that time. That it is Etruscan and not Greek is shown by the shoe with turned-up toe, which was the regular shape employed by the Etruscans during the archaic period,¹ but which was foreign to Greek use.² Moreover, a detailed examination of the statuette will bring out many differences between it and contemporary Greek figures, which will demonstrate just how far the Etruscan artist succeeded and how far he failed to attain the level of his best Greek models.

First as regards the pose. In this the maker of the statuette can be said to have wholly succeeded. It has all the grace and delicate charm which distinguish archaic Greek art, without giving any suggestion of artificiality due to imitation; also the gesture of the left hand, with thumb and forefinger clasping the drapery and the three other fingers extended to their full length and bent slightly backward, is a small affectation not quite true to nature, but rendered here with great effect.

Again, in the modelling the artist attained a large measure of success. The features are carefully rendered and no longer in the primitive manner, but in the developed archaic style. The eyes are slightly narrowed and the eyeballs not so prominent as in the earliest figures. The representation of the mouth is also more adequately dealt with; for it is no longer a simple curve or line with turned-up corners, resulting in the archaic smile, but is carefully modelled, an effort being made to form a transition from the extremities of the lips to the cheeks. The chin and the cheek-bones are still strongly

¹ Cf. representations on paintings of the period, e.g. *Martha*, *L'Art étrusque*, pl. IV, and Figs. 285, 286; and numerous archaic Etruscan statuettes.

² L. Heuzey, in Daremburg and Saglio, *Dictionnaire*, I, p. 819, mentions only one example of its occurrence on Greek monuments; namely, a relief from Sparta.

marked, as always in archaic art, but no longer with any exaggeration. The neck is thick-set and the formation of the throat is hardly indicated; but in the rest of the figure there is a distinct attempt to make the forms of the body show through the drapery, the rendering of the chest being particularly good. Noteworthy is also the careful indication of the finger nails.

So far the figure stands on a high level and in no way betrays the hand of the copyist. When we come, however, to an analysis of the dress we are on different ground. Here the Etruscan artist has frankly failed to understand his models. Perhaps we cannot feel much surprised at this lack of comprehension when we consider the numerous contradictory theories which have been advanced regarding this mode of dress in modern times¹; and as a matter of fact at no period was Greek dress, at least as preserved to us on classical monuments,² more complicated and luxurious than during this time, that is, the second half of the sixth century B.C.

To understand where the artist of our statuette went astray in his rendering, we must briefly recapitulate the chief features of this early style of dress which he was trying to represent.³ The most essential part of it was the chiton, which covered the whole body from the neck to the feet. It was made of two rectangular pieces of linen, sewn together on their long sides

¹ The three main theories are: (1) that the dress consists of three different garments, first the chiton, then the chitoniscus (a sort of woolen jersey worn over the chiton), and lastly the himation (cf. e.g. Collignon, *Histoire de la sculpture grecque*, I, pp. 342 ff.); (2) that there are two garments, the chiton and the himation, the former being visible only on the left arm and shoulder, everything else being part of the himation (cf. e.g. Holwerda, *Jb. Arch.* I. 1904, pp. 10 ff.); (3) that there are two garments, the chiton and the himation, the skirt belonging to the chiton, and the himation consisting only of the upper piece fastened generally on the right shoulder and passing under the left arm (cf. e.g. Kalkmann, *Jb. Arch.* I. 1896, pp. 30 ff.; Lechat, *Au Musée de l'Acropole d'Athènes*, pp. 168 ff.; E. B. Abrahams, *Greek Dress*, pp. 87 ff.; and most recent writers on the subject).

² It is interesting to note in this connection that Solon found it necessary at the beginning of the sixth century B.C. to forbid women to go out with more than three garments (. . . ἐξέρατο μέν ιματίων τριῶν μη πλέον ἔχουσαν κελεύσας . . . Plutarch, *Solon*, XXI, 26).

³ In this short survey I have chiefly followed Lechat's description in his book *Au Musée de l'Acropole d'Athènes*, pp. 150 ff.

within a short distance of the upper corners to reserve openings for the insertion of the arms. The upper end was left open in the centre for the head, and was either sewn or fastened with brooches on the two shoulders and upper arms. Over this chiton was worn the himation. This seems to have consisted of a rectangular piece of woollen cloth draped round the body, starting from the right shoulder and passing across the chest and under the left arm so as to leave the left arm and breast uncovered. It was fastened with brooches on the right shoulder and upper arm to within a short distance from the corners, the rest of the material being allowed to hang loose on either side of the arm. The mantle was arranged in a series of broad, vertical or oblique folds, which were kept in place by a band running over its upper edge. Over this band some of the material was pulled up and allowed to fall like a sort of frill, which accounts for the uneven outline of the lower edge of the mantle.

Now to return to our statuette. The most glaring mistake is the rendering of the himation. Instead of making it pass round the figure front and back, the artist treated it merely as a sort of front panel terminated on both sides and not appearing at all at the back. This treatment results in a mass of contradictions:—

There is no clear boundary line between the chiton and the himation on the right arm, and when viewed in front the right sleeve appears to belong to the himation, while from the back it clearly is part of the chiton.

A slit running halfway down the chiton on the right side is a meaningless addition, presumably placed there as a sort of compromise, since this is the place where should have come the other edge of the himation.

A series of short oblique lines are punctured along the right side of the himation, which doubtless are meant to indicate the folds of zigzag outline formed by the loose material hanging right and left of the sleeves. As, however, no such loose material is represented in our statuette, the indication of these folds is inconsistent.

Besides these more obvious blunders there are several minor errors: The skirt when held up by the left hand and drawn tightly across the legs would naturally form a series of oblique

folds converging to the hand, and this is the way we find it represented on Greek figures. The maker of our statuette indicates these folds, but does not make them converge to the point from which the garment is pulled, thus losing their *raison d'être*. The chiton has of course a certain thickness, and must therefore be indicated as slightly raised above the skin. In our statuette, though rightly represented where it comes in contact with arms and legs, it is on one level with the neck, the edge being marked merely by incised lines. The result is decidedly confusing.

No attempt is made to represent the characteristic little folds on the upper part of the chiton, for the oblique wavy lines incised on the right side indicate the wrinkles caused by the insertion of the brooches to form the sleeve.

That the Etruscan artist succeeded sometimes in correctly representing the complicated form of himation which is here attempted, is shown by several specimens,¹ which, though of rough execution, at least carry the garment round the whole figure and thus preserve its inherent character of a mantle. It is therefore the more surprising that a maker who did so careful a piece of work as our figure should be so little conversant with what he was representing. The possibility suggests itself that he was copying from a vase-painting or from a relief, and being himself unfamiliar with the garment, naturally came to grief when he had to represent the back.

An examination of the treatment of the hair is also interesting in that it shows the same combination of success and failure. The arrangement chosen is that found on some of the Acropolis statues (cf. No. 671, Lechat, *op. cit.*, p. 153, Fig. 9), except for the omission of the locks falling in front. The hair is parted in the middle and combed to either side, presenting a wavy outline over the brow, and allowed to fall loose on the back. In addition, a strand of hair is carried forward from the top of the head, forming a long loop over each temple, and then brought back behind the ears. In our statuette these loops are not rounded off properly, but are represented as cut off sharp at their lower ends, which gives them the singular appearance

¹ Cf. e.g. Babelon et Blanchet, *Bronzes antiques de la Bibliothèque Nationale*, No. 206.

of separate tufts of hair. The general effect, however, is admirable; and especially at the back, where the hair hangs loose, it has a very lifelike appearance, the smooth, glossy surface being represented with quite extraordinary ability.

The delicately executed decorative borders on the dress, the fillet with the rosettes,¹ the necklace, and the rosette-shaped earrings,² all find analogies in Greek representations. The tassels at the ends of the himation are commonly found in representations of this garment on vase-paintings.³

Our analysis of this statuette discloses what from other sources we have been accustomed to regard as the characteristics of Etruscan art,—namely, great skill in the rendering of detail coupled with a curious lack of feeling for the structure of the whole; witness, for instance, the representations on the Etruscan chariot in the Metropolitan Museum. But that Etruscan art, imitative though it may be, and possessing the natural defects of all imitations, is not always lifeless and clumsy as we find it in so many of its products, but could attain real artistic merit, is seen by a few fine examples,⁴ among which this statuette will occupy a conspicuous place.

In conclusion a word must be said with regard to the interpretation of this figure. It is now pretty generally agreed that the Acropolis maidens represent neither a particular goddess nor a priestess, but a mere votary;⁵ for in no instance have these maidens any definite attribute which would allow of a more particularized identification. The case is similar here; because, though the object held in the right hand is missing, there can be no doubt that it was a fruit, flower, or

¹ Many of the fillets on the Acropolis statues are pierced, showing clearly that they were originally also decorated with ornaments. Cf. e.g. the figure by Antenor, and Nos. 670, 673, 675.

² Almost all the Acropolis maidens wear earrings of the same shape, hiding completely the lobe of the ear.

³ Cf. Furtwängler u. Reichhold, *Griechische Vasenmalerei*, I, pls. 16, 22, 43, 44, 46, 49, etc.

⁴ Such as Babelon et Blanchet, *Bronzes antiques de la Bibliothèque Nationale*, No. 213; Martha, *L'Art étrusque*, Figs. 338 and 339; Micali, *Monumenti inediti*, pl. XIII, 1, 2.

⁵ Cf. H. Lechat, *Au Musée de l'Acropole*, p. 276; E. A. Gardner, *Handbook of Greek Sculpture*, pp. 164 f.; etc.

animal, such as make up the offerings held by the statues. In the absence of further evidence, therefore, we must call this statuette simply a maiden, perhaps placed as a votive offering in some sanctuary.

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NEW YORK.

Archaeological
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SAN SAVINO AT PIACENZA

I. HISTORY AND STRUCTURE

[PLATES V-VII]

THE church of San Savino at Piacenza cannot be said to be unknown, since it has occasionally been referred to by writers on the history of art, especially such of them as have occupied themselves with Romanesque mosaics. It is, nevertheless, a singular fact that this edifice, although situated in a city visited by great numbers of tourists and students, has not, up to the present, been given serious study. The passing notices which we find in the works of scholars of such standing as Venturi,¹ Strzygowski,² Dehio,³ and Ambiveri,⁴ either pass by in silence, or give actually misleading information upon the purely architectural features of the church. In the history of Lombard architecture, however, San Savino should occupy a place second to few if any other monuments. Not only is the church intrinsically of the greatest interest, but since it is authentically dated, it furnishes a central point of chronological support which makes it possible by the method of comparison to establish the epoch of other edifices, such as, for example, Sant' Ambrogio at Milan and San Michele at Pavia. Had the many

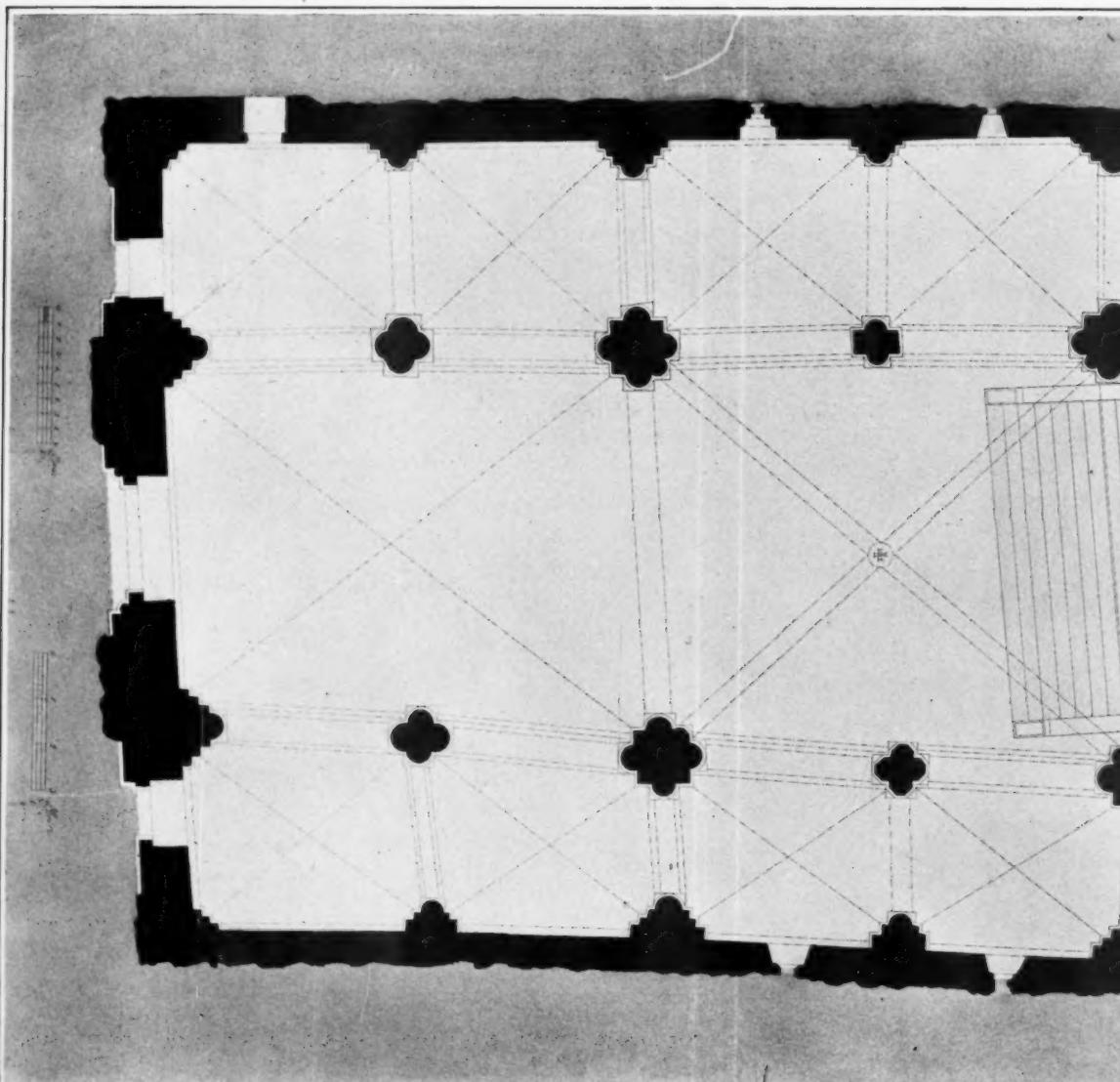
¹ A. Venturi, *Storia dell' arte italiana*. Milano, Ulrico Hoepli, 1901. 7 vols., 8vo. III, 427.

² Joseph Strzygowski, *Die Calenderbilder des Chronographen vom Jahre 354*. Jahrbuch des kaiserlich deutschen archaeologischen Instituts. Ergänzungsheft I, 1888.

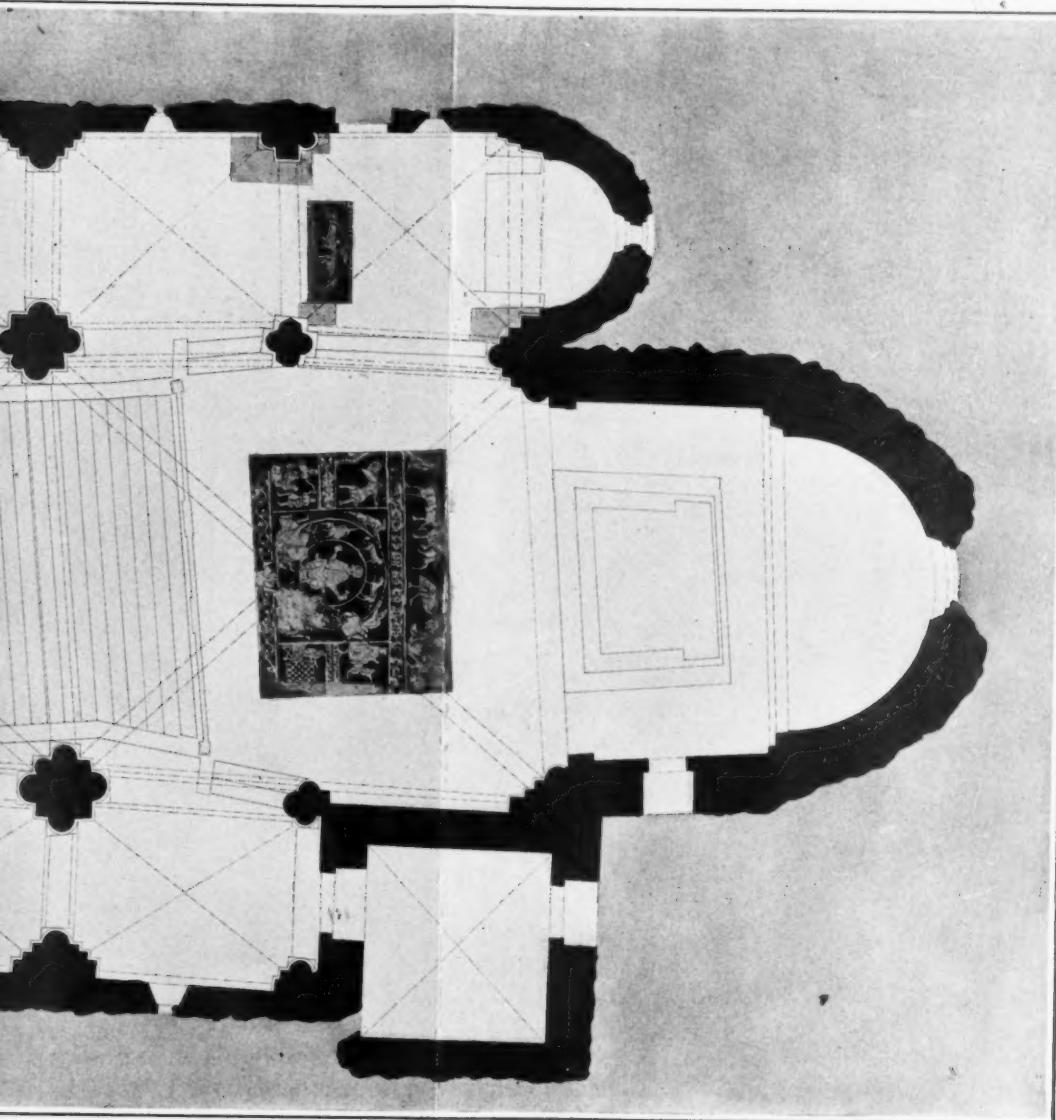
³ G. Dehio und G. von Bezold, *Die kirchliche Baukunst des Abendlandes*. Stuttgart, J. G. Cotta, 1892. Text in 4to, 2 vols. Atlas in folio, 4 vols. Taf. 163 a.

⁴ Luigi Ambiveri, *Monumenti ecclesiastici piacentini*. Piacenza, Bertola, 1888. Pamphlet. Estratto dall' Indicatore Commerciale del 1888.



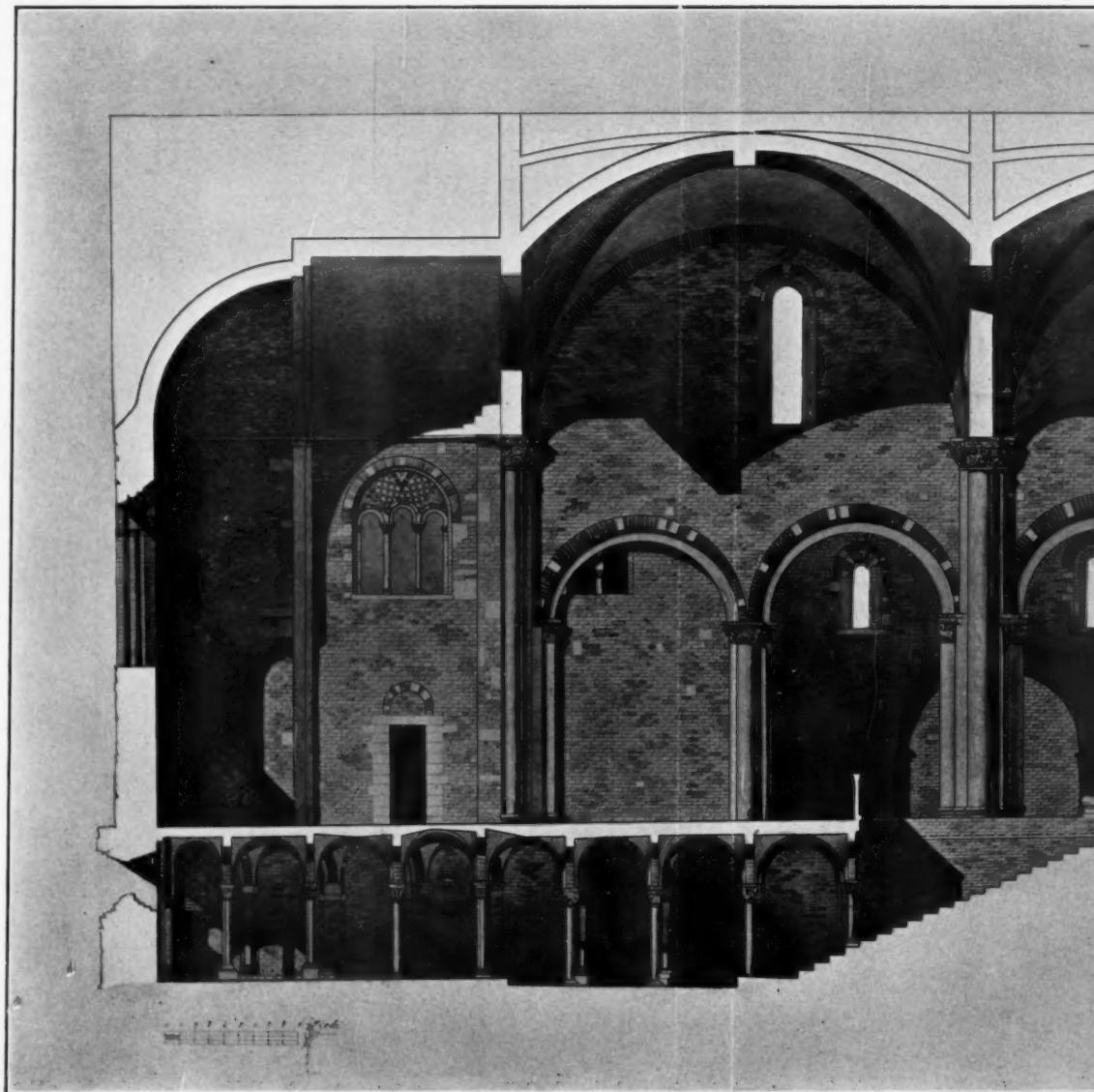


SAN SAVINO AT PIACENZA. GROUND PLAN OF THE



THE CHURCH RESTORED (A. Covini, del.)

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SAN SAVINO AT PIACENZA. LONGITUD
The apse, the door and triforium of the choir, and the windows are modern.



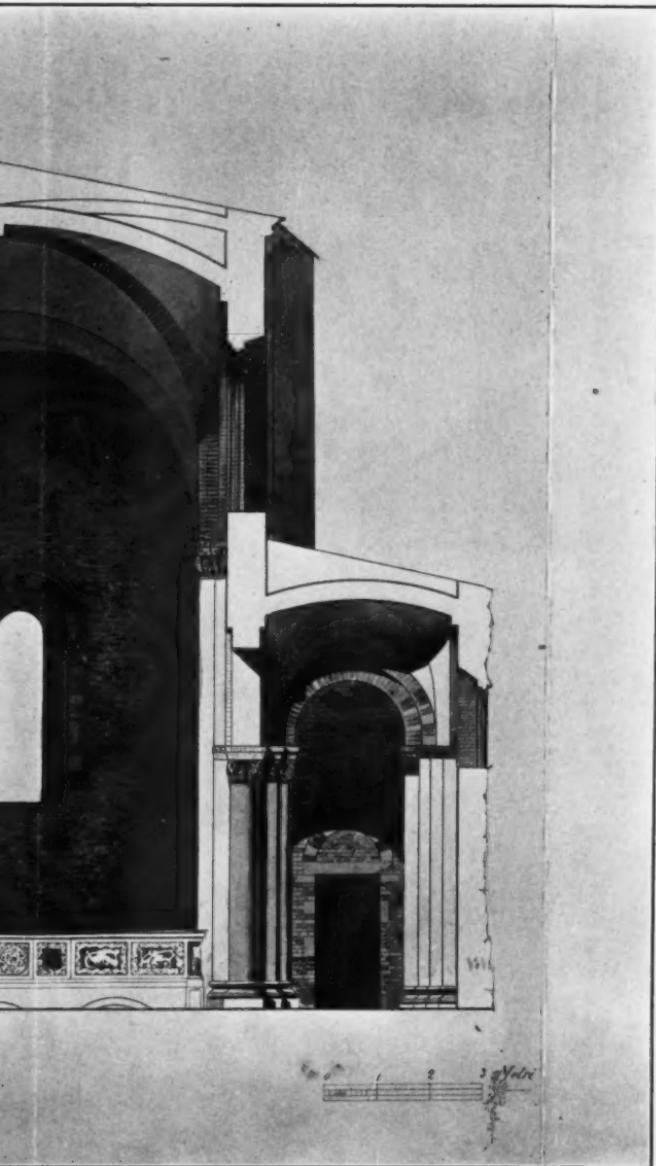
LATERAL SECTION (A. Covini, del.)
The original cells and the lines of the existing roof are indicated.

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SAN SAVINO AT PIACENZA. TRANSVERSE SECTION OF THE
The apses, the choir rail, and the windows are modern.



THE CHURCH AS IT EXISTS TO-DAY (A. Covini, del.)
ern. The cells of the original roof are indicated.



authors, who have been disputing for nearly a century upon the chronology of the Lombard style, taken the pains to study this church, lying, as it were, directly beneath their eyes, the controversy would have been decided long ago. It is unfortunately significant of the desultory and dilettante manner in which mediaeval archaeology has been too often pursued, that such a notable edifice, certainly entitled to rank among the most important examples of Romanesque architecture in northern Italy, has remained practically unknown.

A certain number of local scholars, it is true, have occupied themselves with San Savino. By all odds the most important publication on the church is the little book published at Piacenza (Stabilimento Tipografica Piacentino) in 1903 under the title *La Regia Basilica di San Savino*. This contains six separate monographs: *Memorie Critico-Storiche della Basilica di San Savino*, by D. Gaetano Malchiodi; *Iscrizioni Cristiane* and *Mosaici della Basilica di San Savino*, by G. Tononi; *L'Arte nel Crocefissio di San Savino*, by G. Ferrari; *Il Tabernacolo del 1510*, by Pietro Piacenza; and *I Restauri della R. Basilica di San Savino*, by Ettore Martini. This book is illustrated with thirty-four half-tones, several of which are of great value, since made from photographs taken before or during the restoration. The studies themselves are of varying merit, but in general contain little that is not found elsewhere. The account of the restorations by the engineer Martini is, however, important, since it contains descriptions of parts of the church which now no longer exist and a detailed analysis of the radical alterations carried out under the author's supervision. In the other monographs the student will find helpful notices only occasionally. The archaeological and artistic importance of the church has escaped all these authors, since they have mistaken the chronology of the building and have failed to place the monument in relationship with other examples of the Lombard style.

Of value chiefly for its illustrations in half-tone is the pamphlet on the capitals of San Savino by Dr. D. Gaetano Malchiodi.¹ The same writer has contributed a life of San Savino that contains some useful historical references and several half-tone

¹ Dr. D. Gaetano Malchiodi, *I Capitelli della Basilica di San Savino*. Piacenza, Favari, 1907.

illustrations of the basilica.¹ In the brief guide-book of Leopoldo Cerri² the history of the abbey is briefly summarized. Finally, the anonymous pamphlet entitled *Piacenza Monumentale*³ should be mentioned, since it contains a number of good half-tones taken from *La Regia Basilica*.

On the second respond of the southern side aisle, counting from the west, is an inscription stating that the church of San Savino was built by the bishop Everardo in the year 903; that in the year 1000 (*sic*) it was rebuilt by Bishop Sigifredo; that Bishop Aldo consecrated it on the 15th of October, 1107; that a thousand years after its first foundation the pious Prevosto Cassinario, finding that the architectural character of the building had suffered through barocco additions and that the edifice was threatening ruin, restored the church in its original (*sic*) form; and finally that Bishop Giovanni Battista (Scalabrini) celebrated the consecration on the 8th of November, 1903.⁴ This inscription, it is true, is no older than the restoration of 1903. It is here cited because it offers a convenient résumé of the history of the monument.

There is a tradition that San Savino, bishop of Piacenza, founded, a short distance outside the city, a church dedicated to the Apostles, in which he himself was subsequently buried.

¹ *San Savino Vescovo di Piacenza*. Piacenza, Tononi, 1905.

² Leopoldo Cerri, *Guida di Piacenza storica ed artistica*. Piacenza, Marina, s.d.

³ Piacenza, Foroni, 1908.

* HANC DIVI SABINI AEDEM
AB EVERARDO EPISC AEDIFICATAM
ANNO CMIII
AB ANTISTITE VERO SIGEFRIDO
ANNO M ITERUM EXCITATAM
ALDUS CONSECRABAT ID OCT MCVII
MILLE A PRIMA FUNDATIONE
ELAPSIS ANNIS
EAMDEM IN PLURIBUS CORRUPTAM
ET IAM OCCULTE COLLABENTEM
ANTIQUAE SIMPLICITATI RESTITUIT
PIUS CASSINARIUS PREPOSITUS
CONSECRAVIT
IOANNES BATISTA EPISCOP
VI IDUS NOVEMBRIS MCMIII

In fact, in the *Chronicon Placentinum*¹ of Giovanni da Musso there is a remarkable passage to the following effect: "Constantinus and Opinianus, who were of Rome, built a church at Piacenza in honor of the Twelve Apostles. This church was consecrated by the blessed Bishop Savino. In it rest the bodies of the bishop and of five other saints. . . . Concerning this church others have written: I, Mauro, humble bishop in the reign of Lothaire, by order of the angels came to my own city and buried the body of Bishop San Savino on the 17th of January. I consecrated the altar in honor of him and Sant' Antonino on the 4th of February. I buried San Gelasio on the 6th of March. I buried San Vittorino the deacon . . . in May. I buried the body of San Donnino the deacon on the 23d of December. The blessed virgin Vittoria departed this life; after their death, Mauro, the bishop, lived six years. I, Abbot Ephrem, buried his body next to the body of San Savino, at the left, and wrote this with my own hand, and placed it here. I come not to break the law, but to fulfil it. No one shall be crowned except him who has fought the good fight. The year of the incarnation of Christ, 447." Then follows what we learn from another text which will be cited below to be an epitaph on the tomb of the saint: "Savino, a man of sanctity and righteousness, founder of this monastery, rests for eternity at the feet of the saints. His body is worthy of being placed beside those of the Apostles, for his faith was like theirs." The chronicler resumes: "These very old writings, which can with difficulty be read, are found in a certain very old book in the church of San Savino at Piacenza. The relics of the saints referred to were buried in the old church of San Savino at Piacenza, that is, the church which the bishop Savino consecrated in honor of the Twelve Apostles."²

¹ Ed. Muratori, *R.I.S.* XVI, 620.

² Constantinus & Opinianus, qui de Roma fuerunt, aedificaverunt Ecclesiam unam in Placentia ad honorem duodecim Apostolorum, quam consecravit Beatus simus Antistes Sabinus, cuius corpus hic requiescit, cum quinque corporibus Sanctorum. . . . De ista Ecclesia & aliis. *Ego Maurus humilis Episcopus de Lotherio Regno, & propter Angelicam jussionem veni ad propriam Civitatem, & sepelivi corpus Sancti Sabini Episcopi XVI. Kal. Februario. Istud Altare ego consecravi in suum honorem, & Sancti Antonini Martyris Pridie Nonas Februario. Sanctum Gelasium sepelivi Pridie Nonas Martii. Sepelivi corpus*

Giovanni da Musso was an author who lived in the fifteenth century. His notices, although taken, as he asserts, from a very old manuscript, offer so many difficulties that they are open to the suspicion of being forgeries, perpetrated at an early date, possibly with the purpose of authenticating spurious relics. Thus the document is dated in the year of the incarnation of Christ, 447; but, in the first half of the fifth century, the year was always denoted by the names of the consuls. Furthermore, the emperor Lothaire is spoken of as living at that time, whereas, in fact, he was not born until over three hundred years later. Finally, to pass by many minor inconsistencies, an abbot of San Savino is mentioned in a document purporting to be of the fifth century, when, as we shall presently see, the abbey was not established until the tenth century.

However, the good faith of Giovanni da Musso himself is not to be doubted, and we are fortunately able to prove that he has quoted his sources exactly, since the manuscript to which he refers is still in existence and has been studied by Poggiali.¹ This manuscript, which was written in 1253 by a certain Rufino, monk and *Carmarlingo* of the monastery of San Savino, contains an index or catalogue of the manuscripts which the archives possessed at that time. After the catalogue, begins a history of the monastery. "The church of San Savino," he says, "was founded in the year 423, and was, at first, situated in the fields outside of the city of Piacenza. This I found

Sancti Victorini Diaconi. . . . Idus Madii. Recondivi corpus Sancti Donini Diaconi X Kalend. Januarii. Migravit de hoc seculo beatissima Virgo Victoria; post obitum eorum vixit Maurus Episcopus annis VI. Ego Abbas Ephrem sepelivi corpus ejus juxta corpus S. Sabini in sinistram partem, & scripsi mea manu & condivi hic. Non veni legem solvere, sed adimplere. Nemo coronabitur nisi qui legitimè certaverit. Anno Incarnationis Christi CCCCXLVII.

"Has aedes condens sacra virtute Sabinus
Sanctorum pedibus junctus requiescit in aevum
Dignus Apostolica sociatus corpore sede."

Haec scriptura multum vetustissima reperitur in quodam Libro maximè vetustissimo in Ecclesia S. Savini Episcopi Placentiae, quae vix potest legi. Hae Reliquiae Sanctorum reconditae erant in Ecclesia veteri S. Savini Episcopi Placentiae, quam dictus Antistes Savinus in honorem duodecim Apostolorum consecravit.

¹ Christoforo Poggiali, *Memorie storiche della città di Piacenza*. Piacenza, F. G. Giacopazzi, 1757-1766. 12 vols. 4to. II, 55-75.

written in a certain privilege almost illegible because of its great age, so that I could with difficulty make out what I was seeking. But I did find who were its founders and whence they came, since it is written in a certain very old martyrology that there were two men, illustrious for their wisdom and goodness, excellent for their sanctity and religion, who came from the city of Rome; one was called Constantinus and the other Opinianus. They founded a church situated, as has been said, in the fields outside the city of Piacenza and dedicated to the Twelve Apostles. This church that they built was large and splendid, as may be gathered from what is written in a certain privilege of the blessed Everardo, bishop of Piacenza. This was the church dedicated by San Savino, and here the blessed Mauro buried solemnly the body of San Savino, after the death of the latter. In after years, by the grace of divine mercy, innumerable concessions and gifts and many privileges were bestowed upon this church by the popes of the Holy Roman Church and by Catholic emperors. But of these diplomas I cannot give an account; for, about the year 902, pagans, enemies of the Cross of Christ, came and devastated whatever they could lay their hands upon that was outside of the city of Piacenza, and in their tyrannous rage mercilessly slew men. These hordes completely destroyed the church of San Savino, which had at first been consecrated in honor of the Twelve Apostles. The above facts are related by Sant' Everardo, an illustrious bishop of Piacenza, who labored with all his might to build anew the monastery in which I am.”¹

¹ *Fuit enim primo constructa Ecclesia Beati Savini in Campanea Placentina a prima fundatione sui CCCCXXIII a Christi Nativitate, secundum quod reperi in quodam Privilégio nimia vestustate consumpto, ita quod vix in eo potui deprehendere quod quaerebam. Sed & Fundatores qui fuerunt, & unde originem duxerint reperi, scilicet in quodam vetustissimo Martyrologio, quod fuerunt duo viri sapientia & bonitate paeclarci, sanctitate & religione ornati de Civitate Romana. Unus vocabatur Constan. & alius Opinian. Fundaverunt enim primo, ut dictum est, quamdam Ecclesiam in Campanea Placentina ad honorem Dei, & XII. Apostolorum, & fecerunt eam mirae magnitudinis, secundum quod in quodam Privilégio D. Enurardi Episcopi Placentiae continetur; quae consecrata fuit per Beatissimum Savinum Episcopum Placentiae; in qua Ecclesia Beatissimus Maurus corpus S. Savini post mortem ejusdem canticis sepellivit. Inde factum est, divina suffragante clementia, quod eidem Ecclesiae innumerabiles concesiones, & offensiones, & multa privilegia a summis Pontificibus S. R. E.*

The covers of this document are formed of two manuscripts, — one, a ritual, the other, a memorandum of the consecration of the new church of San Savino, and of the relics which were deposited in that edifice. The latter, also published by Poggiali,¹ reads as follows: "The church of the bishop and confessor San Savino was dedicated in October, 1107. These are the relics there placed: first, under the principal altar, the body of San Savino Confessor."² Then follows a long list of relics, after which the manuscript continues: "This church [Mosia has been added above in a later hand] was built by the Romans Constantinus and Opinianus, in honor of the Twelve Apostles. The blessed bishop, Savino, whose body rests there together with the bodies of five other saints, consecrated it."³ After another list of relics, the manuscript resumes: "Near by is another tomb where lie three virtuous monks, Luca, Ambrogio, and Privato; elsewhere is the tomb of the abbot Vittorino and others."⁴ Then follows the same passage quoted by Giovanni da Musso, with indeed a few verbal differences, but not such as throw any light upon the difficulties of chronology. Thus Mauro is spoken of as the last (*ultimus*) bishop of the reign of Lothaire, instead of as "humble" (*humilis*) bishop.⁵

& a fidelibus Imperatoribus sint collata, de quibus mentionem facere non potero. Tempore enim quo currebat DCCCCII, venerantur Pagani, & inimici Crucis Christi, & destruerunt, & comburerunt quicquid repererunt extra Placentiae moenia Civitatis, tyrannica rabie, hostili gladio humana corpora trucidantes; & tunc cremaverunt, & destruerunt penitus Ecclesiam Beati Savini, quae in honorem XII Apostolorum fuerat primitus consecrata. Et praedicta narrata inventiuntur per D. Enurardum egregium Praesulem Placentinum, qui totis viribus studuit istud Monasterium, in quo sum, de novo videlicet fabricare.

¹ *Ibid.*

² *MCVII de Mens. Octob. dedicata est Ecclesia B. Savini Episcopi, & Confessoris.* Hae sunt Reliquiae ibi positae. Primo in Altare Majori est Corpus B. Savini Confessoris, etc., etc.

³ *Istam vero Ecclesiam (Moxiarum evvi scritto di sopra, ma da penna più moderna) aedificaverunt Constantinus & Opinianus, qui de Roma fuerunt, ad honorem XII Apostolorum, quam consecravit Beatiss. Antistes Sabinus, cuius Corpus hic requiescit, cum quinque corporibus Sanctorum.*

⁴ *Ad latera eorum alium sepulchrum, ubi requiescunt tres Monachi Religiosi, idest Luca, Ambrosius, & Privatus. In alia cuba, contra nullam horam (sic), sepulchrum Abbatis Victorini de ista Ecclesia, & alii.*

⁵ I give this text, as cited by Poggiali, entire for purposes of comparison with the text of Giovanni da Musso quoted above: *Ego Maurus ultimus Episcopus de Lotherio Regno, & propter angelicam visionem veni ad propriam Civitatem,*

But these are not the only copies of the mysterious notice that have come down to us. Another, recording precisely the same things in the same words, is said by Poggiali to exist in one of the two *Vetutissimi Necrologii* of the archives of the monastery, and still others are extant in various other manuscripts. Certain of these have been stated to be as old as the tenth century, but Poggiali, who appears to have made a careful study of the subject, believes that none can be assigned to so early an epoch. At any rate, it is clear that the notice was fabricated before 1253, when Ruffino, whose good faith there seems to be no reason to doubt, read it in a manuscript which he asserts was very ancient. At whatever date this false notice was concocted, it is entirely probable that it preserves for us, mixed with fictions, an authentic tradition, viz., that the body of San Savino was buried in a church in the suburbs of Piacenza in a spot known as Mosia. As for the date 423 when, according to Ruffino, the church was founded, the saint was at that time certainly dead, although the year of his decease is somewhat doubtful. If, therefore, the church of the Apostles was built during his pontificate, as seems probable, it must have been founded somewhat earlier than this.

This same tradition is echoed in another notice, probably also inexact, but which seems to be derived from an independent source. The *Chronica Episcoporum Placentinorum* states: "Savino built outside the city a wonderful monastery (*sic*) which afterwards was entirely destroyed and everything belonging to that monastery was transferred to the basilica of the Twelve Apostles by San Mauro, his successor. The latter buried there San Savino as well as Eusebio, Donnino, Vittore, Gelasio, and Vittoria."¹

& sepellivi Corpus S. Sabini Episcopi XVI. Kalend. Februar. Istud Altarium
ego consecravi in suum honorem, & S. Antonini Martyris. Pridie Non. Febr.
Sanctum Gelasium sepelliri. Pridie Non. Martii sepellivi Corpus S. Victoris
Diaconi. Idus Maji recondivi Corpus Domini. X Kal. Jan. migravit de hoc
saeculo Beatissima Victoria. Post obitum eorum vizit Maurus Episcopus Annis
VI. Id. Septemb. migravit. Ego Abbas Ephrem sepellivi Corpus ejus, juxta Corpus
S. Sabini in sinistram partem, & scripsi manu mea, & condivi hic. Non veni legem
solvere, sed adimplere. Nemo coronabitur, nisi qui legitimè certaverit. Epitaphium
supra tuba S. Sabini. Has Aedas condens sacra virtute Sabinus, Sanc-
torum pedibus junctus requievit in aeternum, dignus apostolica sociatus corpore sede.

¹ Hic (Sabinus) aedificavit extra Civitatem mirabile Monasterium, quod postea

That the church of the Apostles was destroyed in 903, is known not only from the passage from Ruffino quoted above, but, happily, from the original charter of Everardo, which is still extant, and has been published by Campi.¹ In this charter the bishop states² that he and his chapter had unanimously vowed "to erect a monastery in the church of San Savino, the Confessor of Christ, which is situated not far outside the walls of the city." He goes on to relate: "While we were desiring with fervent love to fulfil this vow, there came, alas! the miserable and horrible race of unhappy pagans, who slew men with their swords, and burned with the fire of their fury the churches of God, and in particular that church of San Savino. Subsequently, we began to consider often and diligently how to avoid breaking our vow, and we earnestly sought another site for the monastery. By the Grace of God, our search was rewarded and we found a suitable and fitting place within the walls of the city in a field which we had acquired justly and legally; and there we erected a church from its foundations, in the name of God for the honor of God and San Savino, and there we instituted monastic discipline. . . . Therefore, we give the said field to the new church of San Savino." The deed was dated March 30, -903.³ From this authentic docu-

penitus destructum est, & omnia illius Monasterii fuerunt translata in Basilicam duodecim Apostolorum à Beato Mauro successore suo, qui corpus ejus sepelivit cum infrascriptis corporibus videlicet; Eusebium, Doninum, Victorem, Gelasium, & Victoriam. (Ed. Muratori, *R.I.S.* XVI, 627.)

¹ Pietro Maria Campi, *Dell' historia ecclesiastica di Piacenza*. Piacenza, Giovanni Bazachi, 1651. Folio. 3 vols. I, 478.

² Quapropter pari voto, parique consensu statuimus Monasterium aedificare monasticum in Ecclesia B. Sauini Confessoris Christi sita haud procul foris Cuiutatis murum. . . . Haec itaque vota dum feruent amorem cuperemus explore (heu pro dolor) superuenit misera, horrendaque gens infelicium Paganorum, qui hostili gladio corpora trucidantes, igneq; furor Ecclesias Dei cremantes concremaverunt pariter praefatam B. Sauini Ecclesiam. Postea denique caepimus frequenter, sedulèq; tractare, quatènus nostrum non casseretur votum; alterum diligenter requisitiimus situm. Quaesitiimus igitur, & miserante Deo inuenimus habilem & congruum locum infrà Cuiutatis moenia in nostro scilicet praedio iustè, & legaliter acquisito; ibique in Dei nomine Ecclesiam ad honorem Dei, & S. Sauini à fundatione construximus, atq; officinas monasticas ibidè ordinavimus. . . . Quo circa praedictum praedium nostrum ad eandem nouam S. Sauini Ecclesiam tradimus.

³ Regnante D. Berengario gratia Dei Rege anno regni eius in Dei nomine sextodecimo, tertio Kalen. Aprilis indictione sexta.

ment it is evident that anterior to the destruction by the Hungarians, there was no monastery connected with the church. The charter of Everardo seems to imply that in 903 the new church was already erected. Certain relics, however, were not translated until some years after this, for the *Chronica Episcoporum Placentinorum* states: "Conrad was elected bishop of Piacenza in the year of our Lord 912. He translated the bodies of the saints Vittore, Donnino, Gelasio, and Peregrino into the crypt of San Savino."¹ At any event, the building erected in the early years of the tenth century seems to have been hastily and poorly constructed (as, indeed, the misfortunes of that unhappy age may well have necessitated), since a century later the church was rebuilt. This fact is recorded by two late chroniclers: Giovanni da Musso, who states that "in the year of Christ 1005 the monastery of San Savino was rebuilt without the walls of the city of Piacenza by Sigifredo, bishop of Piacenza";² and the author of the *Chronica Episcoporum Placentinorum*: "Sigifredo was elected bishop of Piacenza in the year 997. He sat twenty-two years. . . . He built a wonderful monastery in the city of Piacenza in honor of San Savino."³

That the church was again rebuilt at the end of the eleventh century and consecrated in 1107 is known from three sources. First, the manuscript in the archives described by Poggiali and already cited above, gives us the exact year of the consecration, October, 1107. Secondly, the same *Chronica Episcoporum Placentinorum* we have already often quoted, adds the name of the bishop who consecrated the church: "Aldo was elected bishop of Piacenza in the year 1103, and sat eleven years; he consecrated the church of San Savino."⁴ Thirdly, a text of Giovanni

¹ Conradus eligitur Episcopus Placentinus Anno Domini DCCCCXII. Hic corpora SS. Victoris, Donini, Gelasii, & Peregrini recondidit in inferiori Ecclesia S. Sabini. (Ed. Muratori, *R.I.S.* XVI, 629.)

² Anno Christi MV. Monasterium S. Savini fuit reaedificatum extra muros Civitatis Placentiae per Sigifredum Episcopum Placentiae. (Johannis de Musso, *Chronicon Placentinum*, Ed. Muratori, *R.I.S.* XVI, 451). The charter of Everardo states distinctly that the church was *within* the walls of the city.

³ Sigifredus electus fuit Episcopus Placentinus Anno Domini DCCCCXCVII. Hic sedit annis XXII. . . . Monasterium mirabile in Civitate Placentiae in honorem S. Sabini aedificavit. (Ed. Muratori, *R.I.S.* XVI, 630.)

⁴ Aldo fuit electus Episcopus Placentinus Anno Domini MCIII. seditque annis XL. . . . Hic consecravit Ecclesiam S. Sabini. (*Ibid.* 630.)

da Musso states that "in the year 1107 the monastery of San Savino was consecrated by Lord Aldo, bishop of Piacenza."¹ That the consecration took place on the 15th day of October, is added by Campi² and Poggiali.³ Whence these authors derive this additional piece of information I do not know, but suspect that they may have had under their eyes a fourth notice of the consecration of 1107, of which I can find no trace. In any case the texts already cited are sufficient to establish the fact that the church was dedicated in that year.

The remaining history of the monastery may be briefly resumed. Endowed with more than the usual number of possessions and worldly goods by various pious benefactors, it became extremely wealthy and powerful. The vast extent of its lands is evident from the Bull of Innocent II. of *ca.* 1132.⁴ Later, like most of the Italian monasteries, San Savino fell into decline. At the end of the fifteenth century the church was completely restored by Ruffino di Lando, in a style very different from that of the early twelfth century, which it had doubtless preserved up to that epoch. This is recorded by an inscription, still extant in the church, that has been published by Ambiveri⁵ and Malchiodi.⁶ This re-building was doubtless occasioned by the fact that in 1495 the same Ruffino di Lando, who was the Commandatory Abbot, had dismissed the Benedictine monks, and installed instead monks of the order of St. Jerome. Gregory XIII, by a Bull⁷ dated from Frascati on May 19, 1579, suppressed the Abbey and Command and forbade the use of the insignia of abbatial dignity in the church. The monks of St. Jerome, however, still remained there until 1810.⁸ In 1631 the ancient apse was replaced by a new choir, and in 1687 the nave was being covered with barocco stuccos. Chapels in the same style were added to the side aisles.

¹ Anno MCVII. Consecratum fuit Monasterium S. Savini à Domino Aldo Episcopo Placentiae. (*Ibid.* 452.) The same author records the consecration of 1107 a second time. (*Ibid.* 621.)

² *Op. cit.* I, 378.

³ *Op. cit.* IV, 58.

⁴ Published in part by Poggiali, IV, 120.

⁵ Luigi Ambiveri, *Dei principali errori detti intorno ai monumenti piacentini*. Piacenza, Gregorio Tononi, 1887. Page 34.

⁶ *La Regia Basilica*, p. 31.

⁷ Poggiali, *op. cit.* X, 197.

⁸ Ambiveri, *Monumenti*, p. 18.

The Lombard edifice disappeared beneath a coating of intonaco, although some portions of the twelfth century edifice always remained visible. The mosaics of the crypt were described by Campi in 1651; this author saw in the nave a mosaic representing a labyrinth which no longer exists. In the view of the façade printed by Poggiali in the middle of the eighteenth century there is visible, it is true, no trace of twelfth century architecture, but Ambiveri, writing in 1888, speaks of the church as still preserving its Romanesque pilasters and crypt. However, he states that the pilasters had been stripped of their barocco intonaco during the nineteenth century.¹ Not until the recent radical restoration of 1902-1903, was the interior of the church completely freed of its Renaissance embellishments.

The church consists at present of a nave of three double bays, two side aisles, a rectangular choir, and an apse (PLATE V). The northern side aisle terminates in an absidiole, while the southern is cut short by the campanile which rises in the easternmost bay. Before the recent restoration there were numerous barocco chapels, but all except two have been removed. The nave is covered with rib vaults in its two easternmost bays, by a groin vault in its westernmost bay; the choir has a barrel vault, the side aisles and crypts groin vaults throughout.² There is no tri-



FIGURE 1.—DETAIL OF CLEARSTORY
ABOVE THE EASTERNMOST ALTERNATE
PIER ON THE NORTH SIDE OF THE
NAVE.

¹ This was done in 1855, according to Malchiodi, *Capitelli*, p. 3.

² Three vaults of the side aisles have been rebuilt. (Martini, in *La Regia Basilica*, p. 59.)

forium gallery, but a high clearstory. The supports of the nave are alternately heavy and light (PLATE VI). On the heavier piers is engaged a system of three shafts, which is carried through the capitals of the piers and receives the ribs of the vaulting (Fig. 1). In front of the church is a narthex in the barocco style, which probably replaces a destroyed narthex of the twelfth century. The ancient façade is still marred by barocco intonaco, but it is clear that it was raised above the roof lines so as to mask the true form of the section of the church.

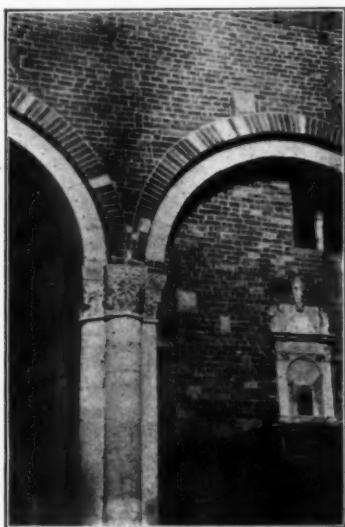


FIGURE 2.—EASTERNMOST PIER ON THE SOUTH SIDE OF THE NAVE; SHOWING BASE AND PRE-EXISTING CAMPANILE.

the tower has unfortunately been entirely denatured in the time of the Renaissance.

The groin vaults of the crypt are supplied with transverse and longitudinal arches, but doming is avoided, probably because the builders did not wish to raise higher than necessary the floor of the choir (PLATE VI). This crypt of San Savino is extraordinary in that it is placed entirely below the level of the church; I mean to say that the choir floor over it is hardly raised above the level of the nave. Raised choirs are characteristic of Lombard edifices of the eleventh and twelfth centuries,

The campanile is older than the rest of the edifice. This is evident not only from its position, since it cuts off the southern side aisle, which is, as it were, built around it (PLATE V), but from the fact that one of its windows, which must have opened outside formerly, now looks into the interior of the church and is cut across by one of the arches of the main arcade (Fig. 2). This campanile contains in its lower story a very slightly domed groin vault. The upper part of

and it is necessary to go back to early Christian or Carlovingian monuments, such as San Salvatore at Brescia, to find an example of a crypt thus sunk, like a cellar, below the level of the church. In the eighteenth century the crypt was enlarged by the addition of a new bay to the westward; in the restoration of 1903 this bay was removed and the existing stairway was erected.

The groin vaults of the side aisles are domed and supplied with transverse and longitudinal arches (PLATE VII). Of similar type is the groin vault of the westernmost bay of the nave (PLATE VI). The rib vaults of the eastern bays of the nave have square diagonals of brick and are also highly domed. The present choir is largely, and the apse entirely, modern, but the latter has been restored on the traces of the old foundations, which are still visible in the exterior of the east walls. The doorway and trifora on the south side of the choir are modern, but the barrel vault over the choir is ancient (Fig. 3). The foundations of an ancient apse, antedating the one on the foundations of which the existing modern apse has been built, were discovered during the restoration of 1903, beneath the present choir. It was therefore inferred by the restorers that the church originally terminated in an apse, placed where is now the choir; and that the choir and apse, upon whose foundations the existing ones were erected, were substituted, at a later date, for this original apse. Most unfortunately no photographs or measurements were made of the foundations, nor has the quality of the masonry been described. It is consequently impossible to judge of the date or of the significance of these remains, which have been covered up. However, the apse built upon the plan on which the present one was constructed, was contemporary with the existing church, as is proved by the quality of the little ancient masonry belonging to it that still survives. The earlier apse must therefore have belonged to an earlier building, not improbably to that of 1005.

An act of unpardonable vandalism on the part of the restorers was the destruction of the ancient roof of the church, a monument of the greatest archaeological and technical importance, and unique in Lombardy, if not in Europe. From what is told me by persons present in the church during the restoration and

by Signor Martini, it is clear that there was erected above the vaults of the nave a series of lesser vaults, superimposed one upon the other, and worked to the form of a gable, on which tiles were laid directly.¹ In the sections (PLATES VI and VII) I have attempted to indicate the structural principles on which this remarkable roof was erected and the lines of the principal vaults. This restoration, however, is frankly hypothetical in several details. The smaller, upper vaults I have not even attempted to restore, owing to complete lack of evidence of their dispositions.

This roof of San Savino is of significance for the history of art. Instances are numerous in which the Lombard builders attempted by various expedients to reduce the use of timber in their roofs. In fact, rib vaults were adopted, as I have shown in my monograph on the subject,² solely with the view to economizing wood. Domed groin vaults had been constructed in Italy ever since the Byzantine period, with the aid of the very flimsiest sort of centring in wood, consisting merely of two moulds following the lines of the diagonals and of a movable cerce. To erect a groin vault over a large area, such as a nave, with so light a centring, overtaxed the daring and ability of the early architects. They consequently substituted for light wooden arches following the lines of the groin a heavier, more substantial arch in brick, which served as a permanent centring on which the vault could be erected with the aid of a cerce. Hence the rib vault. The church of San Savino offers a curious demonstration of the fact that the rib vault was considered thus merely as a structural makeshift. In the two eastern bays, which, as we shall presently see, were the first erected, ribs were used; in the later western bay, the architect seems to have felt himself able to construct a groin vault even without the use of ribs, and accordingly immediately abandoned them. To dispense with wood still further, he avoided using timbers in constructing a roof to cover his vaults, but placed there instead the series of vaults already described. By means

¹ Martini (in *La Regia Basilica*, p. 60) has written a brief description of this roof and has published the only photograph made of it before its destruction.

² *The Construction of Gothic and Lombard Vaults*. New Haven, Yale University Press, and Oxford, Henry Frowde, 1911.

of this clever device he was enabled to place the roof tiles on his edifice without using a single stick of timber. There are extant numerous other Lombard edifices in which roofs were constructed entirely without wood. Usually in such cases, however, as at Santa Annunziata of Corneto, or San Fedele of Como, a solid bed of mortar is laid on top of the vaults, and on top of this bed of mortar the tiles are placed. The arrangement at San Savino was infinitely more ingenious. By a series of vaults the weight of the mass imposed upon the roof was vastly lightened, a sort of porous construction of hollow cells being substituted for a solid mass of masonry. Moreover, these cells were very cleverly disposed, so that their weight fell principally either upon the transverse arches or upon the outside walls, and thus did not charge unduly the great vaults underneath. This ingenious roofing, without any doubt, was contemporary with the original construction of the church. The vast quantity of material removed from this roof when the cells were demolished during the recent restoration was for the most part employed to construct the new walls and especially those of the side aisles. I was fortunate in discovering, however, in a yard back of the church, a pile of bricks which the sacristan assured me had formed part of the demolished roofing. These bricks were certainly of *ca.* 1100, and hence contemporary with the bricks employed in the main body of the edifice.

The main vaults of the nave are reënforced at present somewhat irregularly by salient buttresses and at times by transverse walls raised upon the transverse arches of the side aisles (PLATE VII). They have been more or less changed, but appear never to have been regular or symmetrical.

The section of the piers shows considerable variation, as may be seen in the plan (PLATE V). In some cases polygonal members are introduced. The responds of the side aisles, like the piers of the nave, are alternately heavier and lighter.

Tie-rods in metal, traces of which were found during the restoration, were used to neutralize the thrust of the arches of the main arcade.

The church is constructed of bricks in which are inserted stone trimmings and occasionally blocks of stone placed irregularly in the wall. The bricks are comparatively small, of vary-

ing thickness, and evenly laid in horizontal courses. The great majority was new, but some second-hand ones were employed. Occasionally herring-bone courses are inserted; often the bricks are laid with their small ends exposed. At times the courses are broken by bricks placed vertically or in triangular patterns. All the bricks are incised with herring-bone lines. This cross-

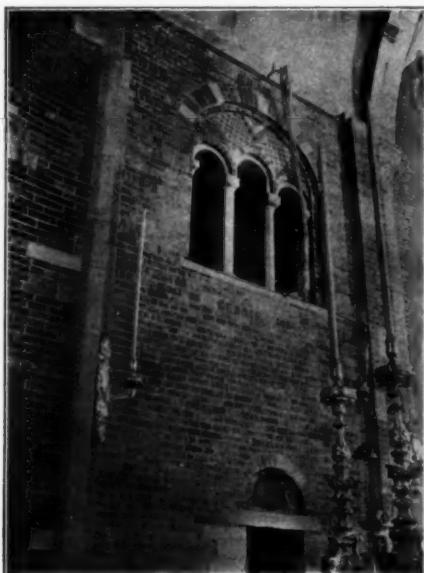


FIGURE 3.—SOUTH WALL OF CHOIR; SHOWING BARREL VAULT AND
FRAGMENTS OF ANCIENT MASONRY.
(The doorway and triforium are modern.)

hatching is a characteristic of Lombard bricks, and was purposely done to afford a key for the intonaco with which the walls were completely covered. Lombard bricks were made by hand, not in a mould, hence is to be explained their extraordinary variety of size and shape. Incised lines were scratched on the clay when it was still soft and wet and before it was baked. Since the bricks were not made for any special position, it was found convenient to incise more than one side, so that the bricklayer could place them as they happened to fit in.

This explains why we sometimes find the incised side of a brick placed towards the interior of the wall and even incised bricks embedded in solid masonry. During the restoration traces of the ancient frescoes with which the walls were doubtless once entirely covered came to light, but were not preserved. In the narthex are two frescoes in good preservation, but they are not very ancient, being dated 1350 by an inscription.

The masonry of the campanile has been so thoroughly restored that it is impossible to judge of its original character.

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WHO BUILT THE ARCH OF CONSTANTINE? ITS
HISTORY FROM DOMITIAN TO CONSTANTINE

HARDLY anything might seem more audacious than to deny that the arch of Constantine was built in honor of that emperor; yet the really amazing thing is our failure to attend to the numerous hints that this arch had existed long before Constantine. Artists and archaeologists have always been unable to explain how an architect of the decadent age of Constantine could have given to this arch its marvellous proportions and silhouette, which set it above all other arches, even those of the golden age (Fig. 1). Historians have been puzzled by the silence of that early catalogue of the buildings at Rome, the *Notitia*, issued before Constantine's death (334 A.D.), which assigns to Constantine, apparently, only the Janus in the Forum Boarium. The same *Notitia* increases the mystery by speaking of an *Arcus Novus* on the Via Lata, which can only be the arch of Diocletian, dedicated in 303. If in 334 the arch of 303 was still the latest of triumphal arches, how could an arch have been built to Constantine in 315? Besides, a student of Roman law would argue that it was against the unbroken tenets of tradition and law to erect such an arch to an emperor who had not actually been decreed a triumph and whose victories had been not over a foreign but over a domestic foe. According to ancient literature and law, therefore, there was not and could not have been a triumphal arch of Constantine, in the sense that it was built expressly for Constantine. It is quite different if the arch could be recognized as an already existing arch rededicated in his honor.

It is my expectation to prove in this paper that the arch was built long before Constantine; also to show that its construc-

tion should probably be ascribed to the Emperor Domitian, shortly before or after 90 A.D., some 225 years before the dedication to Constantine. After the assassination of Domitian, his *memoriae damnatio* by the senate condemned to mutilation, and sometimes to destruction, all his public monuments, and especially his memorial and triumphal arches, which were closest to him, personally. The dedicatory inscriptions, the statues and reliefs in his honor, were destroyed. His works



FIGURE 1.—THE ARCH OF CONSTANTINE, SEEN FROM THE NORTH.

where spared became ownerless and could be rededicated by or to any emperor, as was the case, for instance, with the Forum of Nerva. But, throughout the second century, this arch, so strongly associated with the odious memory of a tyrant, remained unchanged and unclaimed, for during this prosperous age of the Antonines the senate continued to build special arches for each triumphing emperor. It was only during the third century, when Rome, impoverished and suffering from the frequent absence of the emperors, with an art in constant

decay, and with building operations almost suspended for a half century, resorted to makeshifts in the way of triumphal monuments. Between 203 when the senate built the arch to Septimius Severus and 303 when one was consecrated to Diocletian, we know of the erection of but a single triumphal arch, that of Gordian III, *ca.* 240. What was done by the senate during these hundred years to commemorate imperial victories? I expect to show that the senate utilized for this purpose the ex-Domitianic arch, turning this wound-scarred war-horse into a marvellous historic bulletin board, a triumphal mosaic and palimpsest, which became the quintessence of Roman history during the third century. Then, between 312 and 315, after it had thus long been purged of its original evil association and, as its inscription boasts, become "famous for its many triumphs," its evolution closed, and it was once more dedicated to a single emperor, to Constantine, after a unique and varied career, to be honored throughout the ages as a monument to the first Christian emperor.

It has been universally believed,¹ on the apparently unimpeachable authority of the dedicatory inscription on the arch, and on that authority alone, that when the Romans, grateful to Constantine for reestablishing peace after his victory over Maxentius, just outside Rome, in 312, decided to commemorate the event by a triumphal arch, the architect gathered from several earlier monuments a number of bas-reliefs, statues, and architectural members, especially the main cornice, columns, and pilasters, and built all this material into the fabric of the arch as he erected it. To these spoils he is supposed to have added whatever was needed to complete the design, by the handiwork of contemporary artists, in the decadent style of the Constantinian age. Until quite recently it was supposed that the earlier sculptures that were so used were all of the time of Trajan and taken from one of his arches — either that on the Via Appia or that in the Forum of Trajan — or from some other part of his forum. But this theory, due to the current ignorance of the historic phases of Roman sculpture, was

¹ The Bibliography of the arch is too voluminous to be given here, and it would be superfluous. Good lists are given by Mlle. Bieber, by Sieveking, by Arndt, and by other authors of the studies quoted in the following notes.

shattered in 1889 and 1890 by Petersen,¹ who showed that the eight large reliefs of the attic belonged originally to a triumphal arch of Marcus Aurelius, and who also proposed a new interpretation of the eight medallions. It was suggested that the main cornice with its pilasters and columns, which were too beautiful to be Constantinian, were taken from the same arch of Marcus Aurelius, together with the statues of barbarians on the attic. Some years later,² a new impetus came from a detailed study of the eight medallions in the central zone, which led Arndt to attribute these exquisite works not to the Trajanic age, but to the neo-Hellenic art of Hadrian. An English critic³ then put forward the suggestion that they were of the earlier Flavian age, were in fact Domitianic, taken from the *Domus gentis Flaviae*. Almost at once, a German archaeologist, Sieveking,⁴ while accepting the Flavian date for four of the medallions, saw in the other four the art of Hadrian. Then, quite recently, the publication on a large scale, from casts,⁵ of the heads in the medallions has led to an interesting discussion in which a number of critics have taken part, and in the course of which Sieveking⁶ withdrew his dual suggestion and joined those who believe in the Hadrianic theory. It has been supposed that in these medallions, as elsewhere, the original head of the emperor was changed into a portrait of

¹ 'I rilievi tondi dell'Arco di Costantino,' in *Röm. Mitt.* 1889, p. 314; and 'Die Attikareliefs am Constantinsbogen,' *ibid.* 1890, p. 73. Cf. article by Monaci in *B. Com. Rom.* 1900, p. 25 ff. Later study by Petersen in *Neue Jahrb. f. Klass. Alt.* 1906, p. 522 ff.

² Arndt, in *Denk. griech. u. röm. Skulptur*, text to pls. 555, 559, 560, 565.

³ Stuart Jones, 'Notes on Roman Historical Sculptures' in *B.S.R.* III, p. 213, published in 1905.

⁴ 'Die Medallions am Konstantinsbogen,' *Röm. Mitt.* XXII, 1906, p. 345 ff.

⁵ By Salomon Reinach in *Revue Archéologique*, XVII, 1911, pls. I-XVII, with interesting symposium of opinions by S. de Ricci, Studniczka, and others. Cf. *Revue Arch.* XVII, 1911, p. 465.

⁶ *Berl. Phil. W.* 1911, No. 39. The article which caused his reversal of opinion was one on the medallions by Mlle. Bieber (*Röm. Mitt.* 1911, p. 274), which illustrates the danger of basing a study as delicate, as aesthetic, and as detailed as that of Sieveking on an examination of mere photographs instead of the monument itself. It was a result which I predicted to Dr. Hülsen when he received Dr. Sieveking's article for publication. Such facile criticism without investigation of the originals ought to be discouraged, as it tends to confuse and lower archaeological standards.

Constantine when they were used on the arch; but as certain imperial heads were worked over to represent not Constantine, but some emperor or emperors of about the middle of the third century or later, critics suggested the names of Claudius Gothicus, Philip, Carus, Carinus, and even of Constantine's father, Constantius Chlorus. It therefore became necessary to suppose either that Constantine's artists had done this, which was hardly tenable, or that a few of the medallions had been used by one or more emperors of the third century in some earlier arch from which they would have been once again removed to the arch of Constantine, thus reuniting them once more with the rest of the medallions. This hypothesis also shows into what straits the Constantinian theory was forcing the best critics.

During this time no serious objection was raised to the attribution to Trajan and his Dacian victories of the four great battle scenes from a colossal frieze, now set into the passageway and the ends of the attic.

As for the sculptures of late date and poor style, they had all been ascribed to Constantine's artists: the Victories, the River Gods and Seasons of the spandrels; the keystones; the frieze; the sculptured pedestals of the columns. Quite recently, however, a dissenting voice was raised in regard to the frieze, the greater portion of which, including the triumphal procession, is ascribed by Mr. Wace to an arch or some other monument of Diocletian, a theory which would involve the wanton destruction of this monument only ten or fifteen years after its construction.¹

This summary of the present attitude of critics toward the arch shows that the question has been attacked merely from the side of the aesthetic qualities of the sculptures, if we except a few valuable observations by Petersen on the main cornice and its columns and pilasters. In my own examination, the question will be studied from different points of view, and particular stress will be laid on the structural and technical problems presented both by the sculptures and by the architectural details. The solution which this study suggests will be

¹ Wace in *B.S.R.* III, p. 270 ff. Cf. Monaci in *B. Com. Rom.* 1900, p. 75 ff. and *Atti Pont. Acad. di Arch.* 1901, p. 107 ff. and 1904, p. 3 ff.

tested by the historical, literary, and traditional evidence: only such aesthetic questions will be raised as bear upon the problems of chronology.

In order to clear the horizon, the dedicatory inscription must first be examined. It would seem to state in precise terms that the arch was built for Constantine, and to make it futile even to discuss the question, unless we admit that this was one of the not unknown cases in which a restorer claimed to be the builder. But it is not necessary to have recourse to any such hypothesis. Paradoxical as it may seem, it is out of the mouth of the inscription itself that I can prove that the arch existed long before Constantine. It reads (*C.I.L. VI*, 1139):

IMP. CAES. FL. CONSTANTINO MAXIMO
 P. F. AVGSTO S. P. Q. R.
 QVOD INSTINCTV DIVINITATIS MENTIS
 MAGNITVDINE CVM EXERCITV SVO
 TAM DE TYRANNO QVAM DE OMNI EIVS
 FACTIONE VNO TEMPORE IVSTIS
 REMPVBLICAM VLTVS EST ARMIS
 ARCVM TRIVMPHIS INSIGNEM DICAVIT

Now, if we compare this inscription with others on triumphal arches, of which I give typical instances in a footnote,¹ two

¹ The simplest form of arch dedication is that on the arch of Titus: *Senatus Populusque Romanus divo Tito divi Vespasiani f. Vespasiano Augusto*. A contemporary example of the fuller form corresponding roughly to the formula on the arch of Constantine is that on the destroyed arch of Titus in the Circus Maximus: *Senatus Populusq. Romanus imp. Tito Caesari divi Vespasiani f. Vespasiano Augusto pontif. max. trib. pot. X, imp. XVII, cos. VIII, p.p., principi suo, quod praeceptis patris consiliisq. et auspiciis gentem Iudeorum domuit et urhem Hierosolymam, omnibus ante se ducibus regibus gentibus aut frustra petitam aut omnino intemperatam, delevit*. Both types appear, in the next generation, on the arches of Trajan. The simpler formula, slightly expanded, is at Beneventum: *Imp. Caesari divi Nervae filio Nervae Traiano optimo Aug. Germanico Dacico pontif. max. trib. potest. XVII, imp. VII cos. VI p.p. fortissimo principi, Senatus P. Q. R.* The fuller form appears at Ancona, in which, after the imperial titles, we read: *providentissimo principi Senatus P. Q. R. quod accessum Italiae, hoc etiam addito ex pecunia sua portu, tutiorem navigantibus reddiderit*. In the previous period, we find the longer formula represented on the arch of Claudius in Rome recording the conquest of Britain: *Ti. Clau[dio*

differences will be particularly noticeable: that there are no chronological or triumphal titles given to Constantine, as is customary especially after the second century, and that the last line, in which the arch is mentioned, is an addition to the normal formula, which is unique in Rome and, in fact, in all Italy. In all other cases the inscription is a mere dedication, without particularizing what is dedicated. Normally the inscription would have ended with the word *armis*. There must be some reason for this break with traditional usage, a break which places this arch in a category of its own, and this reason must be sought for in the wording of this additional line. What is the exact meaning of *arcum triumphis insignem*? The unprejudiced Latinist would unhesitatingly translate it "this arch famous for its triumphs." Why has it not been so understood? Because such a translation would not square with the supposition that the arch was built for Constantine, since Constantine had not had even a single triumph, much less several triumphs. His triumphal entrance into Rome after the victory over Maxentius was merely a popular ovation, not a triumph, which is a matter formally voted on and decreed for certain specific deeds, including the enlargement of Roman

Drusi f.] . . . Senatus Po[plusque] Ro[manus q]uod reges Britannia[XI devictos sine ulla iactura in deditio[n]em acceperit gentesque barbaras trans oceanum primus in dictionem populi Romani redigerit. Among the simpler and shorter formulas of the Augustan age, the arch at Rimini represents the fuller form (C.I.L. XI, 365), showing that the arch commemorated the building and repairing of Italian highways and ending: *celeberrime Italiae viae consilio [et sumptibus] suis muniteis.* The style thus inaugurated by Augustus in his early years, and which, as we have seen, was continued until the close of Trajan's reign, was not discontinued under the later Antonines, for it appears on the arch of Septimius Severus in the Forum: *Imp. Caes. Lucio Septimio . . . et Imp. Caes. M. Aurelio L. fil. Antonino . . . ob rem publicam restitutam imperiumque populi Romani propagatum insignibus virtutibus eorum domi forisque, S. P. Q. R.*

In all these cases the monument bearing the dedicatory inscription is left unmentioned.

It is a fact that has some bearing on the present case that the arch of Augustus at Fano was restored under Constantine and *re-dedicated to him* a few weeks after his death, between May 22 and September 9, 337: *Divo Augusto Pio Constantino patri dominorum curante L. Turcio Secundo, etc.* The original dedicatory inscription of Augustus was left when the new dedication was added. This constitutes the main difference between the arch at Fano and the arch in Rome, whence the original inscription had disappeared about two hundred and fifteen years before the Constantinian dedication was added.

territory and the conquest of foreign foes, none of which Constantine could claim. Yet, when the arch was dedicated to him, it was famous, noted, for its connection with *several triumphs*. Not even by the greatest stretch of the imagination, or by granting a breach of immutable Roman law and custom, can one regard this expression as referring to Constantine. On the other hand, it is easy to see how the senate, by taking an arch already built, already used as a triumphal arch, and rededicating it to Constantine, could by this subterfuge honor the emperor without breaking the law.¹

The second peculiarity to which I referred is the absence in the inscription of any chronological and triumphal titles such as are ordinarily given to emperors on their triumphal arches under the middle and later empire. This is the more inexplicable because in the latter part of 315, when the arch is supposed to have been dedicated, Constantine had already been given in inscriptions of 314 and 315 such triumphal titles as Germanicus Maximus, Gothicus Maximus, Sarmaticus, Britannicus, Persicus, Adiabenicus.² In the absence of chronological data in the dedication itself, the only reason there has been for the selection of 315 as the date of the arch has been the supplementary inscriptions in large letters lower down. On the northern face are: VOTIS X on the left pylon and VOTIS XX on the right pylon; and SIC X SIC XX in the corresponding positions on the southern face. It has been supposed that these two expressions were undoubtedly connected with the *decennalia* of the emperor, which took place on July 25, 315, and that they expressed the hope that his twentieth would be as auspicious as his tenth anniversary. It seems curious that no scholar should have tested the accuracy of such a conclusion, but that all have

¹ See the condemnation of Constantine by Ammianus Marcellinus (XVI, 10) for breaking this Roman tradition by erecting arches in Gaul to celebrate victories in wars that were civil or within Roman territory. The proper theory is referred to in Pliny's Panegyric of Trajan, where Domitian's construction of arches without corresponding additions to Roman territory is condemned.

² See Ferrero, in *Atti Acad. Sc. di Torino*, XXXII, p. 837 ff. Cf. *C.I.L.* VIII, 10064; XI, 9; also Pauly-Wissowa *s.v.* Constantinus. It is still asserted that Constantine did not receive the title *Maximus*, which is given to him on the arch, until 315, but Cagnat himself (p. 483) acknowledges that Babelon has proved (*Mélanges Boissier*, p. 53) that he had it as early as October 312.

followed one another unquestioningly. The slightest inquiry¹ would have disclosed the fact that neither in the case of the VOTIS or in that of the SIC was such a rule actually followed by Roman custom. In the case of Probus (276-282), though he reigned for only about *six* years, we find on his coins the expression VOTIS X et XX FEL. Constantius Chlorus, who was Augustus for only about a year, has on his coins VOT. XX SIC XXX. Gratian (361-389), at the most liberal allowance, can be given only 28 years, yet his coins have VOT. XXX MVLT. XXXX. Of emperors whose coins have VOT. XX MVLT. XXXX Constans reigned only five years, Valentinian II about eleven, and Valens about fifteen years. The expression SIC X SIC XX is used of several whose reign was much under ten years — Galerius, Maximinus, etc. Numerous examples can be gathered from Cohen, Eckhel, *et al.* The conclusion is that the expressions SIC X or VOT. X were used or could be used of an emperor during any year of his reign from the second to the tenth.

There is, then, no ground whatever, on the basis of these expressions, for dating the dedication of the arch of Constantine in 315. It could have happened just as well in 314 or 313; or at any time, in fact, after Constantine's victory over Maxentius in October 312. This brings us back to the question of the absence of any triumphal titles in the dedication. If in 314 and 315 Constantine had assumed the titles I have enumerated above, and if they are not given in the dedication, the logical inference would be that the date of the dedicatory inscription antedates 314. I would, therefore, suggest the year 313. As will appear later, the work actually done on the arch by Constantine's artists was not so extensive as to make it necessary to allow more than a few months for its execution.

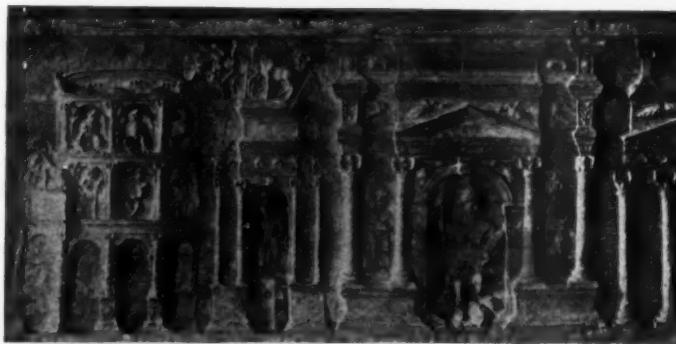
We may conclude then, merely from the dedication, that the arch, already associated with several triumphs before the time of Constantine, was dedicated to him in 313.

Now, an arch, in order to be associated with several successive emperors, would have to be built originally by or dedicated to an emperor who suffered after death the *memoriae damnatio*,

¹ An examination of the index of Cohen-Babelon would be sufficient to establish the baselessness of this imaginary chronological certainty.

which entailed the casting down of his statues and the erasure or destruction of the inscriptions in his honor. In the case of such a triumphal arch, the elimination of the dedicatory inscription would be supplemented by the destruction of bronze quadriga, imperial statue, trophies, triumphal frieze, and any other decorative features that connected the structure very clearly with the person and career of the emperor. It would then be a mutilated civic monument unclaimed and undedicated, which could be adapted to temporary or miscellaneous purposes, and could at any time be rededicated. To which of the emperors with both a triumphal record and the stigma of a *memoriae damnatio* can the construction of the arch of Constantine be ascribed?

This question, which it would seem almost hopeless to ask, is answered with unexpected clearness by the famous topographical



Colosseum.

Arch of
Constantine.Arch of
Titus.Temple of
Jupiter Stator.

FIGURE 2.—PART OF THE HATERII RELIEF, SHOWING THE “ARCH OF CONSTANTINE” AS IT WAS IN THE TIME OF DOMITIAN.

relief from the tomb of the Haterii (Fig. 2), known to all Roman scholars as a corner-stone of Forum topography, which reproduces the principal buildings along the early part of the processional route from the funeral ceremony in the Forum to the mausoleum on the Via Labicana. The first building is the temple of Jupiter Stator at the head of the Via Sacra; the second is the arch of Titus; the third is *an arch hitherto unidentified*; the fourth is the Colosseum. The artist indicates, as

clearly as possible, that the arch of Titus is in the foreground, and that the unknown arch, by its smaller size and lower relief, is in the distance, close to the Colosseum. It is given in profile and its façade has free-standing columns. There is a sculptured frieze encircling the entire arch under the main cornice, and the attic is crowned by an imperial triumphal quadriga. An imaginary niche or arcade is cut in the end of the arch for a statue of the Mater Magna, an indication that her temple was in this section of the Palatine. Every one of these characteristics suits the arch of Constantine. This unidentified arch stands about where it does, faces in about the way it does, and has the same design, in so far as it can be seen from the end. (Compare Figs. 2 and 3.) One of the unrecognized facts about the arch of Constantine is that it probably had a sculptured frieze under its main cornice which was torn away. If the arch on the Haterii relief is not the arch of Constantine, what is it? Not a trace of any arch has been found in the excavation of this immediate neighborhood, nor is there any possibility that it could have stood anywhere except about where the arch of Constantine now stands. A photograph taken with the arch of Titus in the foreground to the right, with the Colosseum in the middle background, would include between them the arch of Constantine seen almost in profile.

What is the date of the arch on the Haterii relief? The relief has been generally conceded to be Flavian, or, more specifically, Domitianic.¹ As the arch of Titus is reproduced, which was finished by Domitian, it can hardly be earlier. As the relief represents the funeral ceremony and the opening of the new family mausoleum, and as busts found in the mausoleum are generally conceded to be of distinctly Flavian art, it cannot be later than Domitian. Consequently, the unidentified arch must belong to the reign of Domitian. The use of free-standing columns at this early date may be objected to. It has been supposed that only engaged columns were used in

¹ Helbig, *Führer*, Nos. 670-675; Crowfoot in *J.H.S.* 1900; Benndorf-Schoene, 343-345; Wace, 'Frag. of Rom. Hist. Rel.' in *B.S.R.* III, 3. Judgment has been based mainly on the technique of the busts found in the mausoleum, but that of the reliefs is also convincingly Domitianic. It is my opinion that the group of four divinities is somewhat later, possibly Hadrianic or Antonine.



FIGURE 3.—EAST END OF THE ARCH OF CONSTANTINE.
(With inserted medallion and frieze cut long after construction.)

the design of arch façades until the time of Hadrian. I have, however, myself called attention to their use in the early part of Trajan's reign. So far as we can judge they had not been introduced in any arches under Augustus, Tiberius, Claudius, or Nero. The arch of Titus, begun before Domitian's accession, did not have them. But in this arch on the Haterii relief they appear, and the inference would be that it is to one of the consummate artists who worked for Domitian that the innovation was due that was slowly to revolutionize arch design. More than this, I may say that several years before I had identified the arch of Constantine as an arch of Domitian I had concluded from a study of the coinage of Domitian that free-standing columns were used in his triumphal arches. As he made himself notorious for the number and magnificence of his triumphal arches, more than any emperor either before or since, it would have been natural for his architect to innovate in their design. The equation, then, can be stated as follows: arch of Constantine = unknown Haterii arch = an arch of Domitian.

The evidence of the inscription and of the Haterii relief, which might seem to be conclusive in themselves, had, however, nothing to do either with my first doubts or with my gradually acquired certitude as to the pre-Constantinian date of this arch. This certitude I gained absolutely from the study of the construction, and it was based entirely on technical grounds which showed me how impossible the Constantinian date was. Only after this conviction had been gained and its details were being carefully worked at and sifted did I see how both the inscription and the relief fitted in with my revolutionary idea and gave to my structural argument the seal of historical corroboration. If the objections to the Constantinian date which I enumerate on p. 368 are now reread, it will be evident that they can all be explained by my proposed Domitianic date.

As a preliminary to the technical study it will be necessary to describe how a triumphal arch was built. The materials varied at different times and in different regions, but one rule always holds good, because it was the orthodox traditional method handed down from Greece to Rome: that all the decorative work was done on the monument itself *after* con-

struction. We are accustomed in modern times to the habit of cutting the ornamentation — both figured and decorative — before setting it in place. So it must be reiterated and emphasized that friezes, medallions, rectangular reliefs, keystones, coffered ceiling, cornices, spandrel groups, were all planned, and the blocks or slabs on which they were to be carved were built up with the structure and left rough, with just the proper projection from the mass, and were not touched until the construction was completed. Then the decorative work was begun, at the top: first the carving and then, at times, the coloring. This preliminary will make it easy to explain the real relation of the sculptures on the arch of Constantine to its structure, and to show how untenable is the current hypothesis.

First, however, a few more words as to the structure itself. The official or central Roman school — as distinguished, let us say, from the Campanian school, or from provincial schools like those in Northern Africa and Syria — began by building triumphal and memorial arches of solid blocks of travertine and tufa and then of travertine alone. This was in the pre-Augustan and Augustan age.¹ Before the death of Augustus, the spread of the use of decorative sculpture on arches made artists adopt a facing of marble slabs and blocks covering the travertine, that should allow of the desirable beauty of detail impossible in the coarser stone. Beginning with a thin veneer the marble facing became gradually heavier. In the time of Constantine and for some time previously the core behind the facing had ceased to be travertine and had become rubble, concrete, and brick. This is exemplified in the Janus arches of the Forum Boarium and at Saxa Rubra, near Rome. In the arch of Constantine we find the earlier technique of the travertine core, and among existing monuments a close analogy is to the arch of Trajan at Beneventum. This in itself argues a pre-Constantinian date for the structure. In the parts where brickwork is added we find Constantinian work on our arch.

¹ Pre-Augustan examples are at Spoleto, Aquino, Trieste, Aix-les-Bains, Carpentras, etc. Augustan examples are at Aosta, Verona, Rimini. Note the thin veneer at Aosta (Porta Praetoria), which is paralleled at Spello in the pre-Augustan gates.

It is also necessary to note that Roman builders were extremely particular not to break the course lines of their masonry, especially in the facing blocks or slabs. The sculptural decoration was not allowed to interfere with this regularity. The course lines were made to correspond to the top and base lines of the reliefs. This was easy when, as was nearly always the case, the marble facing that was left plain was built up together with the projecting facing that was to be worked by the sculptors. In the unusual cases, in later Roman times, when already finished decorative units taken from earlier monuments were embodied in the new construction, as is supposed to have been the case in the arch of Constantine, it would not be difficult to follow the same rule. No architectural critic would hesitate to deny that a Roman architect could have preferred in such a case to zig-zag his course lines rather than take the trouble to gauge their height by his material.

But we find that, in order to incorporate the sculptured slabs into the arch of Constantine the architect was obliged in some cases to cut into the course above for the length of the sculptured slab; in other cases to substitute a wider block in that course with an offset in order to have it set down on to the sculpture; in still other cases, to supplement this by the addition of a small cornice strip at the base. The obvious and imperative conclusion is that in such cases the sculptures were inserted in an already existing structure and could not possibly have been built up with it. Again, no competent architect could decide otherwise. We shall examine presently the examples of each of these methods of insertion.

Before proceeding let me recapitulate the main reasons against the Constantinian date.

(1) It does not explain the series of imperial military busts crowned by Victories set into the masonry of the minor archways. The presumption is that they represent emperors, and that they antedate Constantine.

(2) It does not agree with the fact that the majority of the sculptured decorations were inserted into the structure of the arch at some time *after* the construction. Any architect familiar with Roman work can see this.

(3) It does not explain the terrible damage done to the main

cornice while the sculptures of the attic were so little damaged, but such damage could easily have been caused in casting down the groups on the attic and the attic inscription of Domitian.

(4) It does not explain the use, in the recut sculptures, of heads of emperors other than Constantine; a fact explicable only on the supposition that the arch was connected with these emperors.

(5) It does not agree with the fact that the triumphal frieze, which is even earlier than Constantine, is cut in the already existing masonry and was neither provided for in the design nor brought from another monument.

(6) One is unable to explain, with this theory, how the spandrel decoration came to be drafted on a preexisting structure.

(7) It is, we have seen, contradicted even by the dedicatory inscription.

(8) It is contrary to Roman law and custom.

(9) It is contrary to conclusions based on the *Notitia* and the Haterii relief.

We shall now proceed to the technical analysis, beginning with what is perhaps the simplest problem, that of the end medallions.

The End Medallions (Figs. 4 and 5). In each of the ends there is a medallion, on a level with the eight medallions of the two fronts. They are in a later style and were evidently an imitation of the series of eight. It has been assumed that they are of Constantinian workmanship, though it has been grudgingly granted that their art has pre-Constantinian elements. As a matter of fact it seems like defying the elementary standards of criticism to assert that they belong to the same time and school as the frieze or the spandrels. They seem hardly later than the middle of the third century, and might belong to the time of Severus Alexander. A comparison of these horses with those in the triumphal frieze and the Siege of Verona will illustrate the technical differences. It will be clear, later on, that even this frieze is pre-Constantinian.

If we examine the relation of these end medallions to the masonry, it is evident that they were inserted and were not

part of the original structure or facing. In order to insert the Rising Sun medallion at the east end, which was to be cut in a slab too short to correspond fully to four courses of the facing, the architect first inserted at the bottom of the cut which he made a narrow cornice strip, to serve as a decorative base.



FIGURE 4.—EAST END MEDALLION, "SOL INVICTUS."

This is an evident insertion because it was against Roman custom to carve such mouldings in separate blocks. They were cut either in the top or in the bottom of a wide course, as can be seen without leaving this arch, for instance, in the moulding below the frieze on this same east end. But even with this inserted strip the slab was found not to reach to the level of the fourth course. The architect, therefore, seems to

have removed the facing above it; not only two blocks of the next course but the central epistyle block. He then shortened one of the blocks in order to admit of a new block that should project on both sides of the new medallion. In being put back the shortened block was injured. A new block was cut so as to fit down on to the medallion, and the change in the course line was almost hidden by the thin porphyry framework — now disappeared — which was brought up about to the regular course



FIGURE 5.—WEST END MEDALLION, "DIANA."

level. The jags cut in the block were plainly visible, however, at either end. After this the epistyle block was put back with some slight abrasions. On the right end the upper and lower facing blocks were not cut, but the medallion slab was cut away to fit them and the irregularity was concealed by the porphyry facing of the frame.

In the Moon medallion on the west end, the process was reversed. The two slabs that compose it (each of the other medallions is on a single slab) were longer than was needed, and instead of cutting them down to suit the coursing of the facing slabs, the two slabs of the course above were cut into. The base-moulding also was not separate, as on the east end,

but was cut in the slabs of the medallion. The numerous irregularities seem to show that the insertion was done quite late and led to considerable disturbance of the entire facing. Also, when the surface was cut down to form a square frame filled with some richly colored marble, a queer effect was produced by the narrow rim of the slab left on the right side against the courses.

The conclusion is, on technical grounds, that these medallions were inserted, in the rough block, into the structure of the pre-existing arch and then carved in imitation of the other medallions; on stylistic grounds this happened before the time of Constantine.

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(*To be continued.*)

Archaeological
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METHODS OF DETERMINING THE DATE OF
ROMAN CONCRETE MONUMENTS
(SECOND PAPER)

V. THE PERIOD OF THE INTRODUCTION OF ROOF-TILE
FACING (AUGUSTUS-CLAUDIUS)

Augustus. — The plans of Julius Caesar for his new capital, interrupted by his untimely death, were accepted by his successor and heir as a part of his inheritance. Augustus, however, cast in a different mould from his adopted father, gave to these plans and to the public monuments in which they were embodied a character wholly their own. This distinctive character manifests itself, in the existing monuments, not only in certain new architectural and decorative forms, but also in a new and independent type of construction, to the introduction of which is due, in large part, the importance of the age in the history of the art of building.

The new type of construction, arising in part from the abandonment of much which was faulty in the earlier type, owing to its transitional character, is especially worthy of note in the following respects :

- (1) The clearer recognition of the values of the various materials and methods of construction.¹
- (2) The consequent elimination of many which were inadequate or worthless.
- (3) The introduction of certain new materials and methods, as well as of a number of new principles.
- (4) A distinct advance in technique, due possibly to the importation, in larger numbers, of foreign workmen as well as of foreign ideas.

¹ Concerning the value of the various materials and methods, see the second book of the *De Architectura* of Vitruvius.

(5) The appearance, especially in public monuments, of a recognized, though imperfect, canon of construction.¹

The most conspicuous results of this general advance in the art of construction were the abandonment of sun-dried bricks, or *lateres*, as a building material,² and the marked increase in the use of *opus caementicium*, with its variant, *structura testacea*, for all classes of monuments. With the clearer understanding of the comparative value of the different materials, also, the more friable tufas were abandoned, except for vaults, and a firmer reddish brown variety was adopted almost universally both for walls of *opus quadratum* and for the *caementa* in structures of *opus caementicium*. In place, too, of the earthy *pozzolana-arena* of the earlier periods, a clean red variety³ was introduced, to the use of which is due, in large part, the strength of the Roman concrete. To the group of structural materials were added, also, broken roof-tiles, or *tegulae*.⁴ These tiles were used alike for *caementa* and facing in the new type of construction, called by Vitruvius⁵ *structura testacea*, out of which, when combined as a facing with the earlier *opus caementicium*, was developed at a later time brick-faced concrete, the typical Roman construction.⁶ As a decorative material, Luna marble was introduced, the extensive use of which led to the boast of Augustus that he had received a city of sun-dried bricks but had left in its place one of marble.⁷

¹ The endeavor to create such a canon is shown in the establishment by Augustus of certain general building regulations (Vitr. *De Architectura*, II, VIII, 17; Suet. *Aug.* 89). A considerable portion of the valuable, though pedantic, treatise of Vitruvius is clearly designed, also, to further this endeavor.

² It is possible that the regulation by law of the width of walls (Vitr. *l c.*; Suet. *l.c.*) was designed in part to attain this end, since walls of sun-dried bricks (*structura latericia*) were, of necessity, thicker than those made of other materials. It is clear from the words of Vitruvius, as well as from other evidence, that sun-dried bricks were still in common use in the time of Augustus.

³ This *pozzolana-arena*, the *arena rubra* of Vitruvius (*l.c.* II, IV, 1), which is that now found, according to Brocchi (*Del Suolo Fisico di Roma*, p. 117), near the Tre Fontane, is still regarded as the best variety near Rome.

⁴ Vitr. II, VIII, 19, *et passim*.

⁵ Vitr. II, VIII, 17, 18, 19.

⁶ Nissen holds (*Pomp. Stud.* p. 4) that the most distinctive characteristic of Roman construction throughout the empire is the preference shown in it for the use of bricks and *pozzolana* mortar.

⁷ Suet. *Aug.* 28: *Urbem . . . excoluit adeo ut iure sit gloriatus marmoream se relinquere quam latericiam accepisset.* *Latericium*, as well as *later*

In methods of construction, also, an advance is noticeable, in monuments both of *opus quadratum* and of *opus caementicium*, in the adaptation of the materials to the structural demands of the various monuments or parts of monuments in which they are used.¹ For ordinary walls of *opus quadratum*, reddish brown tufa was commonly employed. Peperino, however, on account of its fireproof qualities,² was substituted for it in certain buildings or parts of buildings, while travertine was used for points of special pressure as well as for decorative purposes. The earlier grayish yellow tufa was retained, on account of its light weight, for the *caementa* of vaults.

By reason of the fuller recognition, at this time, of the special fitness of *opus caementicium* for the more massive parts of structures, such as foundations and podia, important monuments made wholly of *opus quadratum* are very rare.³ The materials used in those of which remains are left are reddish brown tufa, peperino, travertine, and marble. The monuments which may be assigned, though only tentatively,⁴ to this class are the following⁵: the porticus of Octavia (ca. 23 B.C.),⁶ the arch of Dolabella (10 B.C.), the *ara Pacis* (9 B.C.), the aqueduct arch inside the *porta Tiburtina* (5-4 B.C.), the forum of Augustus and the temple of Mars Ultor (6-2 B.C.). The *Marmorata* in the *Campus Martius* and the embankments of the Tiber were probably wholly of *opus quadratum*, as they are reported to have been.

when used alone, refers always to sun-dried bricks. The use of kiln-dried bricks as material for walls was first introduced, as has been said, by Augustus himself.

¹ Cf., for example, *Vitr. l.c.* II, IV, 3; II, V, 1; II, VI, 6.

² In the history of Roman construction as well as in the topography of the city, the influence of the various fires has not been properly estimated. For a list of the fires during the imperial period, see P. Werner, *De Incenditis Urbis Romae Aetate Imperatorum*, Leipzig, 1906.

³ Its use was, however, apparently commended by Augustus (*Plut. Apophthegm. Aug.* 15).

⁴ No final classification of these monuments is at present possible, since the data concerning the material used in the foundations are incomplete.

⁵ Owing to the nature of the discussion, the list here given, as well as those which follow, includes only the monuments to which a date is assignable on other grounds than those of construction. Certain of the other monuments will be discussed in following papers.

⁶ The brick-faced walls of the porticus belong to a later restoration.

The larger number of monuments,¹ however, while retaining *opus quadratum*² for the greater part, at least, of the superstructure and external walls, adopted even more generally than in the last period *opus caementicium* for the foundations and the other more massive portions of the structure. The materials used for the *opus quadratum* in this class of monuments were the same as those used in the preceding class.

The monuments built wholly of *opus caementicium* were, with a few notable exceptions,³ of secondary importance, consisting chiefly of private houses or structures of small size. These monuments, so far as they are at present determined, are the following:

The altar base in front of the temple of Julius Caesar (43 B.C.).

The "schola kalatorum" (ca. 36 B.C.).

The aqua Julia (?) (33 B.C.).⁴

The mausoleum of Augustus (28 B.C.).

The columbarium of the freedmen of L. Arruntius (ca. 6 B.C.).⁵

The fountain and aedicula⁶ of Juturna (ca. 6 A.D.).

The aqua Alsietina (10 A.D.).⁷

The columbarium of the slaves and freedmen of Marcella.⁸

The "auditorium of Maecenas."

The house of Livia on the Palatine: the upper walls.

The villa of Livia at Prima Porta.

The columbarium of the freedmen of Livia.⁹

With the introduction of broken roof-tiles as a material for walls arose, as has been said,¹⁰ the special form of concrete construction called *structura testacea*.¹¹ This differs from *opus*

¹ The list of these monuments is the same as that given on pp. 392 ff., with the exception of those given immediately below.

² *Opus quadratum* was probably retained, in certain cases, with a view to economy of space.

³ The mausoleum of Augustus, the aqua Julia (?), and the aqua Alsietina (?).

⁴ Lanciani, *Acque*, pp. 92-98.

⁵ Piranesi, *Antichità di Roma*, II, pls. IX, X, XVI.

⁶ Boni, *Not. Scav.* 1901, pp. 71, 84.

⁷ Nibby, *Dintorni di Roma*, I, 134; Hülsen-Jordan, *Top.* p. 654, n. 83.

⁸ Mau, 'Rostra Caesaris,' *Röm. Mitt.* XX, p. 200. ⁹ Mau, *l.c.* ¹⁰ P. 388.

¹¹ Vitr. *l.c.* II, VIII, 19, *quare maxime ex veteribus tegulis testa structi parietes firmitatem poterunt habere.*

caementicum faced with *opus testaceum*, the common Roman construction, only in the restriction of the material used for the *caementa* of the structure to roof-tiles.¹

The number of the monuments in which the new type of construction appears is very small, but five having as yet been found.²

The *opus caementicum* of the period, whether used alone or with *opus quadratum*, is very uniform in type. The *caementa*, except in the five monuments mentioned below, consist almost entirely, both in foundations and in walls, of reddish brown tufa, the typical material of the period, with, at times, a small amount of the grayish yellow or lighter brown tufa of the earlier periods. *Cappellaccio*, travertine, and peperino are, also, occasionally found, but no *selce* and, practically, no bricks or marble. In the foundations and *podia*, the *caementa* are large and are laid with little attention to order; in the walls, however, they rarely exceed medium size and are arranged in somewhat irregular rows. In three of the five monuments referred to above, the *Regia*, and the temples of *Saturn* and *Concord*, the choice of the materials used for the *caementa* is clearly due to the large quantities of *cappellaccio* and other poorer varieties of tufa made available by the destruction of the earlier monuments to which they had belonged. The pieces of grayish yellow tufa and travertine which are used as *caementa* in the foundation walls of *opus caementicum* of the basilica *Julia* are plainly the refuse materials from other parts of the building. The *selce* used in the tomb of *Caecilia Metella* is the local stone. In the few vaults which are preserved, the *caementa* are made almost entirely of grayish yellow tufa.³ The mortar is, without exception, of the dusky red type found only in this general period.⁴ It is far finer in quality and less friable than the mortar of the republican period, though lacking the rock-like hardness of that of a century later. The *arena* consists of red or reddish brown *pozzolana*, with which a little gray and

¹ Though these walls are not brick walls in the modern sense of the term, they resemble them much more nearly than do those of *opus caementicum*.

² For the list of these monuments, see p. 396.

³ On account of its lightness, this grayish yellow tufa continued to be used for vaults until the time of *Septimius Severus*.

⁴ The general period includes also the reigns of *Tiberius* and *Caligula*.

white are occasionally mixed. This *pozzolana*-arena, though not strictly *terrosa*,¹ is less clean than that used at a later period, owing to the presence of a fine red dust, to which is due the dusky red color of the mortar.² The lime is more abundant than in the republican mortar³ and is of a very good quality. Thin layers of tufa, travertine, or marble chips⁴ appear at somewhat regular intervals in the body of the concrete, pointing clearly to the width of the portions of the structure made at one time.

In the limited number of buildings or separate walls where a facing was required, *opus reticulatum*⁵ was used.⁶ *Opus incertum* was still retained, however, in a few monuments outside of Rome.⁷ The *tesserae* of the *opus reticulatum* are made normally of reddish brown tufa⁸ and measure from 6 cm. to 10 cm. across the face.

The principal monuments or parts of monuments belonging to the age of Augustus in which *opus caementicum* was used are the following:⁹

The altar base in front of the temple of Julius Caesar (43 B.C.).

The temple of Julius Caesar: the foundations and the podium (42-29 B.C.).

The temple of Saturn: the foundations and the podium (42 B.C.).

The Regia: the upper part of the foundation walls (36 B.C.).

The "schola kalatorum" (ca. 36 B.C.).

The aqua Julia (?) (33 B.C.).

¹ For the meaning of this term, see Vitruvius, *l.c.* II, IV, 1.

² Cf. the mortar of the time of Trajan and Hadrian, pp. 415, 418.

³ For the proportions of the lime and *pozzolana*, see Vitruvius, *l.c.* II, V, 1.

⁴ The *caementa marmorea* of Vitruvius (*l.c.* VII, VI, 1).

⁵ *Opus reticulatum* was correctly held by Mau (*l.c.* pp. 260 f.) to be the typical facing of the Augustan age.

⁶ The more important monuments in which *opus reticulatum* appears are: the "schola kalatorum," the aqua Julia (?), the mausoleum of Augustus, the theatre of Marcellus, the domus Publica, the fountain of Juturna, the aqua Alsietina (?), the columbarium of the freedmen of Marcella, the "auditorium of Maecenas," the house of Livia on the Palatine, and the villa of Livia at Prima Porta.

⁷ The most noted example is the Pondel at Aosta.

⁸ In a few cases, other varieties of tufa are used.

⁹ For the class of monuments included in this list, see p. 389, n. 5.

The curia Julia: the upper part of the foundation of the steps¹ (29 B.C.).

The cloaca in front of the curia Julia: the vault² (29 B.C.?).

The mausoleum of Augustus (28 B.C.).

The Rostra Augusti: the hemicycle and the foundations of the rectangular structure (20 B.C.?).³

The arch of Augustus: the foundations (19 B.C.).

The theatre of Marcellus: the foundations and the inner walls (13 B.C.).

The pyramid of Cestius: the foundations and the body of the structure⁴ (before 12 B.C.).

The temple of Vesta: the foundations and the podium (14-12 B.C.).

The domus Publica: the walls faced with *opus reticulatum* and the foundations of the walls of *structura testacea* (14-12 B.C.).

The basilica Aemilia: the foundations of the steps on the north (?) and the foundation wall of the columns (14-2 B.C.).

The large cloaca under the basilica Aemilia: parts of the top and of the walls (14-2 B.C.).

The sacellum Cloacinae: the upper part (14-2 B.C.).

The porticus of Lucius and Gaius⁵ and the tabernae novae: the foundations of the porticus and of the tabernae (2 B.C.).

The temple of Magna Mater on the Palatine (?) (3 A.D.).

The temple of Castor: parts of the foundation and of the podium⁶ (6 A.D.).

The fountain and aedicula⁷ (?) of Juturna (*ca.* 6 A.D.).

The aqua Alsietina (10 A.D.).⁸

¹ For the lower part of the foundations of the steps, see the previous paper, p. 251.

² Hülser, *Röm. Mitt.* XVII, p. 37, fig. 9.

³ See Van Deman, *The So-called Flavian Rostra*, *A.J.A.* XIII, pp. 175-176, 180-181.

⁴ Nibby, *R.A.* II, pp. 534 ff.; Piranesi, *Ant. di Roma*, III, pl. XL-XLVIII.

⁵ The evidence for the identification of the colonnade in front of the basilica Aemilia with the porticus of Lucius and Gaius will be presented in a later article.

⁶ The greater part of the existing remains is of the time of Augustus. There are no traces of a restoration by Hadrian.

⁷ See above, p. 390, n. 6.

⁸ For references, see p. 390, n. 7.

The temple of Concord: the foundation of the steps and parts of the podium (10 A.D.).

The columbarium of the slaves and freedmen of Marcella (ca. 10 A.D.).¹

The basilica Julia: the foundation of the steps and the foundation wall of the columns (12 A.D.).

The shops adjoining the basilica Julia: the foundations (?) and the vaults (ca. 12 A.D.).

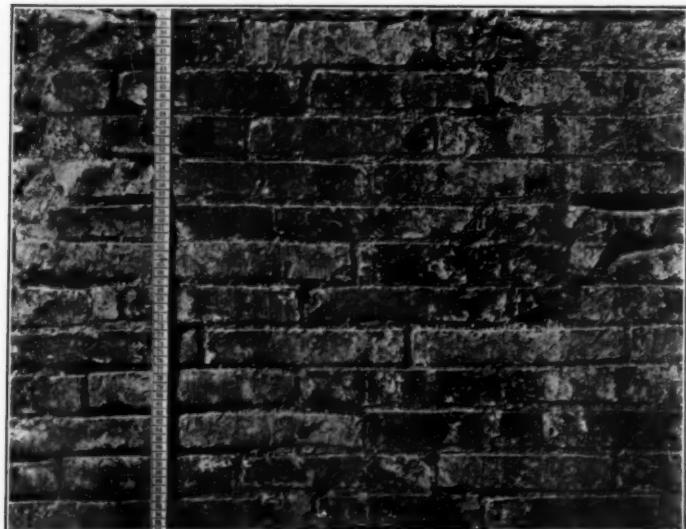


FIGURE 1.—BRICK FACING OF THE TIME OF AUGUSTUS.²

The so-called Cloaca Maxima: parts of the roof and walls.²
The *cuniculi* (completed or restored by Augustus).

The "auditorium of Maecenas."

The tomb of Eurusaces: the foundations (?) and the body of the structure.

The tomb of Lucilius Paetus: the foundations (?) and the body of the structure.

¹ Mau, *Röm. Mitt.* XX, p. 200. ² Narducci, *Fognatura di Roma*, p. 41.

³ From the Rostra Augusti. The photographs used in this and in the illustrations which follow, except in Figure 4, were taken at the distance of a meter and a half from the walls.

The tomb of Caecilia Metella: the foundations and the body of the structure.

The house of Livia on the Palatine: the upper walls.

The villa of Livia at Prima Porta.

In the walls¹ made of *structura testacea*, the *caementa* consist wholly, as has been said,² of the same broken roof-tiles which are used for the facing. The pieces are large and are laid, as a rule, in closely packed though somewhat irregular courses. The mortar is the same as that of the *opus caementicium* described above.

The facing is composed entirely of bricks made from roof-tiles, or *tegulae* (Fig. 1). These tile bricks are, as a rule, irregularly trapezoidal in shape, showing no tendency, as at a later time, to approach the triangular form. The fronts are evenly sawed;³ the other sides are, however, roughly broken. Owing to the nature of the material,⁴ the bricks differ greatly in width, varying, in the Rostra Augusti and the domus Publica, from 3.5 cm. to 4.5 cm. The average width of 50,⁵ which may be accepted as fairly representative,⁶ is 4.1 cm. and the mean deviation .26 cm. Between the two ends of the same brick, also, a considerable difference in width is often found. The length of the bricks varies normally from 20 to 35 cm. They are well puddled and carefully fired, being conspicuous for their almost flint-like hardness. Their color varies from a dark to a light magenta red,⁷ with a tendency, at times, to a magenta yellow.

¹ The foundations of the walls of *structura testacea* are always of *opus caementicium*.

² P. 390.

³ The use of the saw in the preparation of facing bricks is even more noticeable at Pompeii than in Rome.

⁴ The *tegulae* of which the bricks are made are usually 1-2 cm. thicker at the bottom than at the top.

⁵ The exact width of the bricks is as follows:

Measurement in centimetres.	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8
Number of bricks.	3	1	2	5	0	12	5	6	4	2	1	6	2	1

⁶ The bricks are measured, in all cases, in representative groups of 5 or 10, which are selected from as many structures, or parts of a single structure, as is possible.

⁷ For this color, see the previous paper, p. 236, n. 4.

The mortar is slightly finer than in the body of the structure. The horizontal joints are close, varying in the Rostra Augusti from .5 cm. to 1 cm.; they are, however, somewhat wider in the domus Publica, often exceeding 1.5 cm. They are always, so far as can be determined, carefully raked.¹ The vertical joints are very fine, averaging little more than .6-.7 cm. No bonding courses are found.

The monuments built partially of *structura testacea*, with the specific parts of each in which it is used, are the following:

The Rostra Augusti: the walls inside of the rectangular structure and beside the steps in the rear (20 B.C.?).²

The tomb of Sulpicius Platorinus: the inner walls (18 B.C.).³

The domus Publica: fragmentary walls under the shops and street north of the atrium Vestae (14-12 B.C.).

The tomb of Cestius: the walls of the inner chamber⁴ (before 12 B.C.).

The tomb of Caecilia Metella: the walls of the corridor and of the inner chamber.⁵

The principal characteristics, or "earmarks," by which the monuments of *opus caementicium* of the time of Augustus may be most easily distinguished are: (1) the dusky red color of the mortar,⁶ and (2) the regular use of reddish brown tufa for the *caementa* both of foundations and of walls, to the exclusion of the earlier varieties of tufa as well as of bricks and marble. The walls of *structura testacea* of the same time, which are recognizable, likewise, by the color of the mortar, are still more easily distinguished by the exclusive use of broken roof-tiles for the *caementa*, as well as for the facing, of the structure.⁷

Tiberius. — The exuberant building activity of the age of Augustus was followed by a quarter of a century of inactivity.

¹ This fact is of especial importance in its bearing on the question of the methods employed in building brick-faced concrete walls.

² See Van Deman, 'The So-called Flavian Rostra,' *A.J.A.* XIII, pp. 175-176, 180-181.

³ Platner, *Top.* (1911), p. 516.

⁴ Nibby, *R.A.* II, p. 534.

⁵ The data for the tomb of Caecilia Metella are not complete.

⁶ This characteristic is, however, common to the *opus caementicium* of the whole general period, being found also in the monuments of Tiberius and Caligula.

⁷ See n. 6.

For though Tiberius had had no small share in the great undertakings carried out by his predecessor, the ancient writers give him credit as ruling emperor for but two public works, the erection of the temple of Augustus and the restoration of the stage of the theatre of Pompey.¹ At least three other monuments of a more private character were, however, built by him, the *castra Praetoria*, the *domus Tiberiana* on the Palatine and the watch-tower at Capri.² Of these three monuments, as well as of a number of others built during his reign, considerable remains are preserved.

To the history of the development of Roman construction, the long years of Tiberius' reign contribute little, though a slight increase is noticeable in the importance attached to the use of *opus caementicium*.

No certain examples of monuments built entirely of *opus quadratum* remain, and but two of *opus quadratum* combined with *opus caementicium*. The other existing monuments are wholly of *opus caementicium* and *structura testacea*.

The *opus caementicium* used in these monuments differs but little from that of the time of Augustus. The *caementa* in the foundations are in part of reddish brown tufa and in part of *selce*. They are usually of moderate size and are laid with no attention to order. In the walls the *caementa* are, as a rule, largely of tufa, with a little peperino and travertine; no bricks or marble are found. In the *schola Xanthi*, however, *selce* is used in the walls, which are unfaced, as well as in the foundations.³ The mortar is the same as that used in the Augustan monuments, except in the *castra Praetoria*, where a dark gray variety appears.

For the buildings or individual walls where a facing was required, *opus reticulatum* was used.⁴

¹ Tac. *Ann.* VI, 45: *ne publice quidem nisi duo opera struxit, templum Augusto et scenam Pompeiani theatri.* Cf. Suet. *Tib.* 47; Cass. Dio, LVII, 10, 2.

² The period of the so-called palace of Tiberius is uncertain.

³ The walls of the *schola Xanthi*, the level of which was a half metre below that of the Forum, were probably designed merely as substructures to support a platform above, on which stood some important monument, possibly the Golden Milestone.

⁴ The principal monuments in which *opus reticulatum* is found are: The *castra Praetoria*: part of the wall and the inner rooms (Nibby, *l.c.* I, p. 582); the *domus Tiberiana*; the tomb in the *Vigna Codini* (Mau, *l.c.*).

The monuments or parts of monuments in which *opus caementicium* appears are the following:

The schola Xanthi (14-16 A.D.).

The arch of Tiberius in the Forum: the foundations (16 A.D.).

The castra Praetoria: the foundations and a part of the outer wall, and the inner rooms¹ (21 A.D.).

The columbarium of the freedmen of L. Arruntius.²

The domus Tiberiana on the Palatine: probable remains above the clivus Victoriae.

A tomb in the Vigna Codini.³

Structura testacea is found in two only of the more important monuments of the time in Rome,⁴ the castra Praetoria and the tomb of Pomponius Hylas, in the former of which it is used for the outer portion only of the heavier wall of *opus caementicium*.⁵ In general type, it shows no marked change from that of the time of Augustus. The *caementa* in the walls⁶ are, as earlier, of broken roof-tiles laid in irregular rows. The mortar in the tomb of Pomponius Hylas is of the earlier type; in the Praetorian camp, however, it is of the dark gray variety found in the parts of the structure made of *opus caementicium*.

The facing is wholly of bricks made from roof-tiles, which in type resemble very closely those of the time of Augustus. No noticeable change appears in their width, which varies from 3.5 cm. to 4.5 cm. The average width of 50⁷ from the Praetorian camp, which may be accepted as typical,⁸ is 4 cm. and

¹ Nibby, *I.c.* I, p. 582.

² *Ibid.* II, p. 518.

³ Mau, *I.c.*

⁴ It is used also in the watch tower at Capri.

⁵ The projecting towers, of which there were twelve, in addition to those beside the gates, are made wholly of *structura testacea*.

⁶ The foundations of the castra Praetoria are of *opus caementicium*. Those of the tomb of Pomponius Hylas are not visible.

⁷ The exact width of the bricks is as follows:

Measurement in centimetres.	3.4	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3	4.4	4.5	4.9
Number of bricks.	2	2	4	5	4	3	12	5	4	3	2	3	1

⁸ For the method of selection, see p. 395, n. 6.

the mean deviation .1 cm. In composition, texture, and hardness, also, no material difference is found. The color, however, is less uniform, varying from magenta or magenta yellow to clear yellow. The horizontal mortar joints are close, averaging a little over a centimetre, while the vertical joints average much less. Bonding courses do not appear.

No essential difference in type is found between the *opus caementicium* of the time of Tiberius, with its variant, *structura testacea*, and that of the time of Augustus. The specific characteristics, therefore, by which it is distinguished from the *opus caementicium* of the other periods are the same.

Caligula. — Under the porticus on the north of the so-called temple of Augustus, as well as within the building itself, the excavations of recent years have brought to light many fragmentary walls, which from their position and orientation may safely be accepted as part of the famous building by which Caligula sought, according to Suetonius,¹ to make of the temple of Castor the vestibule of his palace.² These walls, with a few belonging to the circus across the Tiber, which were identified in the seventeenth century but are now lost, are all which can be assigned, with any degree of certainty, to the time of Caligula.

The type of construction used in the walls of the circus is *opus caementicium* faced with *opus reticulatum* and brick.³ The remains of the palace are, on the other hand, of *structura testacea*. The foundations are not visible. The walls, however, do not differ in type from those of the time of Augustus and Tiberius. The *caementa* are wholly of broken roof-tiles and the mortar is of the dusky red type characteristic of the general period. The few bricks of the facing which remain vary in width from 3.5 cm. to 4.5 cm., and resemble, in composition, texture, and color, also, those of the earlier part of the period. The horizontal mortar joints vary from 1 cm. to 1.5 cm.

¹ *Calig. 22: partem Palati ad forum usque promovit atque aede Castoris et Pollucis in vestibulum transfigurata.* . . . For Caligula's work as builder, cf. Pliny, *N.H.* XXXV, 111.

² The large basin under the library connected with the so-called temple, though it may have formed a part of the same palace originally, seems, in its present form, to belong to a later restoration.

³ Nibby, *I.c.* I, p. 605.

VI. THE PERIOD OF TRIANGULAR FACING BRICKS
(CLAUDIUS-DOMITIAN)

The period of Claudius, though not conspicuous for the number or magnificence of its civil monuments, is yet distinguished by the boldness and technical skill displayed in carrying to completion the great monuments of engineering undertaken by Caligula. Of the more noteworthy of these, the aquae Claudia and Anio Novus and the emissarium of Lake Fucino, extensive remains have, by good fortune, been preserved to modern times.¹

The period of Claudius is not without distinction, also, in its contributions to the art of building. In the materials used for walls of *opus quadratum* and in the body of the structures of *opus caementicum*, no change occurred at this time. Broken roof-tiles as a specific material for the *caementa* of walls were, however, given up and *structura testacea* as a distinct type of construction disappeared.² As facing bricks, also, broken roof-tiles were, for a time, abandoned, and in their place triangular bricks were introduced. Out of the union of this facing of triangular bricks with the earlier *opus caementicum* arose the typical Roman construction, brick-faced concrete.

For the parts above ground of the aqua Claudia and of a few other monumental structures,³ the earlier construction in *opus quadratum* was retained. In the other greater monuments of the time, however, *opus caementicum* was used alone. Of the most important of these, the aqua Anio Novus, numerous remains are left. The general conclusions here given are, in large part, based upon the data derived from these remains and from those of the foundations of the aqua Claudia.⁴

Owing to the length of the aqueducts and the use, for the sake of economy, of materials found near at hand, a considerable

¹ The remains of the ancient emissarium were, unfortunately, in great part destroyed by the modern engineers in constructing the modern emissarium.

² No walls of *structura testacea* have been found which are later than the time of Caligula.

³ The most important of these are the new arches of the aqua Virgo inside the city and the façade of the emissarium of Lake Fucino. (Brisse and Rotrou, *Desséchement du Lac Fucino*, 1876, p. 252 and pl. VII, Fig. 1.)

⁴ No critical examination of the aqueducts has as yet been possible except within a few miles of the city. Concerning the aqueducts as a whole, therefore, the conclusions here drawn are in no respect final.

difference in details is noticeable at various points in their course. The general type of construction, however, remains the same. The *caementa* in the foundations of the aqua Claudia¹ are of *selce*, with which, however, in the more massive portions of the Anio Novus, large pieces of red and yellow tufa are mixed. In the walls of the *specus* of the Anio Novus which

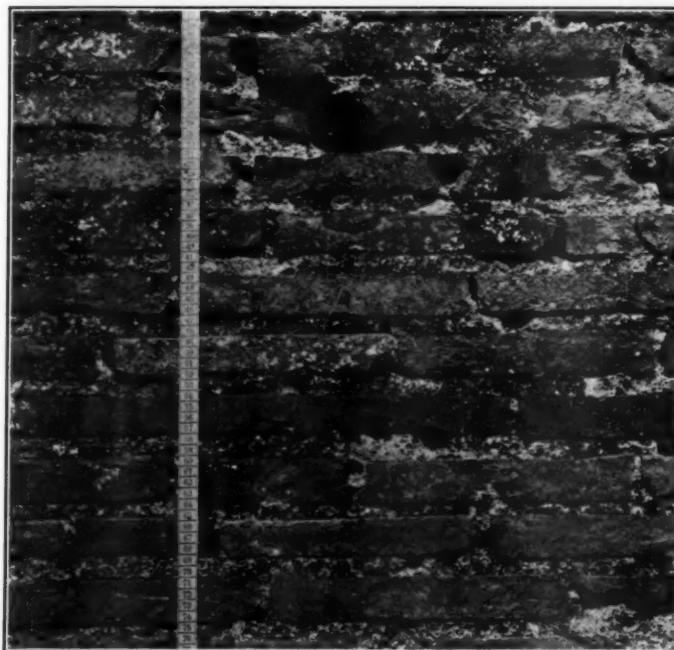


FIGURE 2.—FACING OF TRIANGULAR BRICKS OF THE TIME OF CLAUDIUS.²

are above ground,³ the *caementa* are usually of peperino, the material used for the arches of the aqua Claudia, or of tufa. A few broken roof-tiles and pieces of brick are occasionally

¹ These are most conveniently seen a few miles from the city, near the point where the line of the aqueducts is crossed by the Naples railway.

² From the Anio Novus.

³ The *specus* of the Anio Novus is most easily studied near the railway station of Capannelle.

found. The *caementa* of the roof of the *specus* differ little from those of the walls. The mortar varies considerably with the locality, but is, in general, of a reddish gray tone. The *arena*¹ consists, as a rule, of a reddish brown and gray *pozzolana*, somewhat *terrosa* in character, with which is mixed, at times, a considerable quantity of coarse gravel. The lime is of a medium good quality but is often deficient in quantity.

The facing is of three kinds, *opus reticulatum*, *opus reticulatum* with *opus testaceum*, and *opus testaceum* (Fig. 2). The *opus reticulatum* is found only in certain parts of the inner facing of the *specus*, the other parts of which are faced with *opus testaceum*. The outside of the *specus* is faced with *opus reticulatum* and *opus testaceum* or with *opus testaceum* alone. The *opus reticulatum* is made usually of a yellowish gray or a light red tufa belonging to the region. The *tesserae* measure across the face from 7 cm. to 7.5 cm. The *opus testaceum* used in the facing of the outside of the *specus* is made wholly, so far as seen, of triangular bricks made from the small square bricks,² called *laterculi bessales*.³ On the inside, smaller triangular bricks, as well as a number of broken roof-tiles, are occasionally found. The larger triangular bricks are normally from 3.8 cm. to 4.2 cm. wide. The average width of 100,⁴ which may be regarded as representative, is 4 cm. and the mean deviation .1 cm. In length, they vary from 17 cm. to 27 cm., rarely exceeding 28 cm.⁵ The clay and the red *pozzolana* of which they are made are carefully sifted and well mixed, or puddled. They

¹ The *arena* used for the mortar of the emissarium of Lake Fucino was, according to Brisse (*l.c.* p. 28), a ferruginous lake sand, although a good variety of *pozzolana* is found in the region, which, however, may not have been recognized by the Romans on account of its yellow color.

² For the source of triangular bricks and the method of preparation, see the previous paper, p. 236.

³ *Vitr. l.c.* V, X, 2.

⁴ The exact width of the bricks is as follows:

Measurement in centimetres.	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3	4.4
Number of bricks.	2	2	2	1	8	45	18	17	3	2

⁵ The source of the various facing bricks is often indicated by their length. Cf. the length of the roof-tile facing bricks of the Augustan period, p. 395.

are of medium fine texture and are well fired. Their color varies normally from a yellowish red to a reddish yellow, approaching, at times, a magenta yellow.¹ The mortar is slightly finer than in the body of the structure. The horizontal joints vary from 1.5 cm. to 2 cm. and are carefully raked. The vertical joints average a little more than 1 cm. No bonding courses appear.

The principal characteristics by which the monuments of *opus caementicium* of the time of Claudius are most readily distinguished from those of the preceding periods are: (1) the color of the mortar, and (2) the use of triangular bricks either alone or with *opus reticulatum*. They are, on the other hand, distinguishable, though less easily, from the monuments of Nero and the Flavians (1) by the presence of *opus reticulatum*, and (2) by the quality and width of the triangular bricks.

Nero.—During the earlier years of his reign, Nero displayed his passion for building in the magnificent group of monuments which he erected in the Campus Martius and in the vast palace by which he united the Palatine and the gardens of Maecenas on the Esquiline. In creating a new city, however, on the broad areas laid waste by the great fire, he for the first time found full opportunity for the gratification of his ambition. With the year 64, therefore, begins properly the second great building period of imperial Rome.

In order that his new capital might not be so easily swept away by another conflagration, Nero, by the expenditure of vast sums of money as well as by the establishment of a number of new building regulations,² brought about a series of changes which affected not only the general plan of the city but also the type of construction used in its new edifices. Of the changes affecting the city as a whole, the most important were:³ (1) the adoption of a new *piano regolatore*, at least for the centre of the city; (2) the widening and straightening of the streets and the creation of spacious open squares; (3) the isolation of the houses, by abolishing the use of "common walls" and by the introduction of colonnades, or porticos,

¹ The clear magenta red tone of the earlier tile bricks very rarely, if ever, appears in triangular bricks.

² Tac. *Ann.* XV, 43.

³ For these changes, see Tacitus, *i.e.*

along their fronts.¹ In connection with these more general changes, others of a more specific character took place, which were not without importance in their influence on the development of Roman construction. Among the most conspicuous of the results which attended these more specific changes were: (1) the more general adoption of peperino and other fireproof materials, especially for walls of *opus quadratum*; (2) the more intelligent choice of materials for the *caementa* of the various parts of concrete structures; and (3) the universal use at Rome, in public monuments, of triangular bricks for wall facing, in place of the less practical facing of *opus reticulatum* or roof-tiles.

Though it is clear, from the prescribed use of peperino,² that *opus quadratum* retained its place, in the new city, for certain buildings or parts of buildings, remains of structures made of it either alone or in combination with *opus caementicum* are rare. Monuments of *opus caementicum* faced with *opus testaceum* are, on the contrary, to be found on every hand.

The type of construction used in these monuments is very regular. The *caementa* consist almost entirely of refuse materials from the buildings destroyed by the fire. In the foundations and substructures,³ in the larger number of the monuments, travertine is used in great abundance,⁴ with a smaller quantity of reddish or light brown tufa, peperino, and *selce*. In certain parts of the *domus Aurea*, however, the *caementa* are almost wholly of *selce*. Small pieces of broken and charred marble and a few bricks are found also. The pieces are, as a rule, of medium size. In the walls, the *caementa* are almost wholly of broken roof-tiles and other bricks, of the same or earlier periods, laid in irregular rows. The *caementa* in the vaults are consistently of large pieces of yellowish gray tufa. The mortar is of a dark gray or reddish gray type,⁵ coarse in its composition and, at times, somewhat friable. The *arena* consists of an inferior quality of *pozzolana*, coarsely sifted and

¹ Nissen (*Pomp. Stud.* p. 371) calls attention to the introduction at Pompeii by Nero, a few years earlier, of similar colonnades.

² Tac., *l.c.*

³ See the previous paper, p. 284, Fig 2.

⁴ See the wall in the figure just referred to.

⁵ Cf. the ashy gray mortar of the republican period, *l.c.*, pp. 245, 247.

slightly *terrosa*, the prevailing tone of which is dark gray, but with an admixture of red, reddish brown, and white particles. The lime is of an inferior quality and, at times, is deficient in quantity also.

The facing of the walls in Rome¹ is, without exception, of *opus testaceum* made of triangular bricks (Fig. 3). These bricks



FIGURE 3.—FACING OF TRIANGULAR BRICKS OF THE TIME OF NERO.²

are normally from 3.9 cm. to 4.5 cm. wide, being rarely found less than 4 cm. The average width of 100 bricks³ from the

¹ Outside of Rome, as at Anzio, *opus reticulatum* also is used.

² From the *domus Aurea*.

³ The exact width of the bricks is as follows:

Measurement in centimetres.	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3	4.4	4.5	4.6
Number of bricks.	1	1	1	5	35	18	23	5	1	8	2

atrium Vestae, the domus Aurea, and the arcus Neroniani is 4.1 cm. and the mean deviation .1 cm. The length of the bricks is usually from 25 cm. to 28 cm., never, so far as seen, exceeding 30 cm.¹ Many broken bricks are, however, found, especially in the domus Aurea. The bricks are very poor in composition, consisting of a heterogeneous mass of clay and coarse *pozzolana*, badly mixed and full of holes. They are, however, well fired. They vary in color from reddish yellow to yellowish red and are conspicuous for their streaked and mottled appearance. The horizontal joints of mortar are normally from 1.5 cm. to 2 cm. wide and are, normally, raked. The vertical joints are somewhat irregular, but are commonly from .5 cm. to 1.5 cm.

Bonding courses of the wide yellow *bipedales* regularly used for the arches appear sporadically in the arcus Neroniani.

The principal monuments of *opus caementicium* of the period of which remains still exist are the following:²

The thermae of Nero (62 A.D.).³

The domus Transitoria: fragmentary walls on the Velia (?) (before 64 A.D.).

The atrium Vestae: the imperial atrium of the first period (64-68 A.D.).⁴

The shops on the north of the atrium Vestae (64-68 A.D.).⁵

The porticus along the Sacra Via on the Velia⁶ (64-68 A.D.).

The porticus along the clivus Palatinus⁷ (64-68 A.D.).

The domus Aurea (64-68 A.D.).

The Sette Sale (64-68 A.D.).

The arcus Neroniani (64-68 A.D.).

The general characteristics, or "earmarks," which distinguish the *opus caementicium* of the time of Nero are: (1) the

¹ Since the front of these bricks (*laterculi bessales*) is the diagonal of a square of 20 cm. to 22 cm., the greatest length possible is 31 cm.

² For the monuments included in this list, see p. 389, n.⁵.

³ Nibby, *R.A.* II, 775-776.

⁴ Van Deman, *The Atrium Vestae*, pp. 19 f. and Plan A.

⁵ Van Deman, *l.c.*, pp. 18, 19. These shops form part of an extensive group on the Velia, which will be discussed at a later time.

⁶ The massive substructures of unfaced concrete opposite the basilica of Constantine formed the foundations for the porticus on the south side of the Sacra Via. Traces of a corresponding porticus exist on the opposite side.

⁷ This porticus is the continuation of that just described (n. 6).

dark gray tone of the mortar, and (2) the poor composition, porosity, and mottled appearance of the bricks, as well as their width.

Vespasian. — With the rise of Vespasian to imperial power, a period of wise conservation and reorganization began throughout the realm. A new impulse was given also to the rebuilding of the city, still half buried in ruins,¹ and to the restoration of the public utilities, so sadly neglected by Nero.

In the history of construction, likewise, the reign of Vespasian is one of reorganization, marked not so much by the introduction of new materials and methods as by the intelligent and economical use and skilful combination of those already existing. That this was the result not only of regard for economy but also of sound knowledge is shown by the retention of the same type of construction throughout the whole of the Flavian period.

The most important of the changes which were brought about by the building policy of Vespasian were: (1) the selection of *selce* as the preferred material for the *caementa* of foundations and other massive construction; (2) the re-introduction of the earlier clean red *pozzolana* in place of the poorer grayish variety used in the buildings of Nero; and (3) the adoption of a narrower and more homogeneous type of triangular bricks for the facing of walls.

Opus quadratum appears prominently in the public monuments of the time, and in the Colosseum is united in a most effective way with the massive walls of *opus caementicium*. The remains of the forum of Peace and of the temple of Sacra Urbs are wholly, at least above ground, of *opus quadratum*. The aqua Claudia and the Anio Novus are, on the other hand, restored in *opus caementicium* faced with triangular bricks.

The *opus caementicium*, though lacking the technical perfection of the next general period, is of a good quality. The *caementa* of the foundations are almost wholly, so far as seen, of *selce*. The pieces are of medium size and are laid with no attempt at order. In the walls, the *caementa* are normally of triangular bricks of the same or of the earlier period, which are laid on

¹ See Tac. *Ann.* XV, 41. Suet. *Vesp.* VIII, 5; IX, 1.

the flat side in somewhat even rows. Flanged tiles are also found and occasionally other old materials, as tufa or travertine. The vaults are constructed wholly of *caementa* made of large pieces of yellowish gray tufa.¹ The mortar is of a dirty-white and red type. While not as fine grained as in the

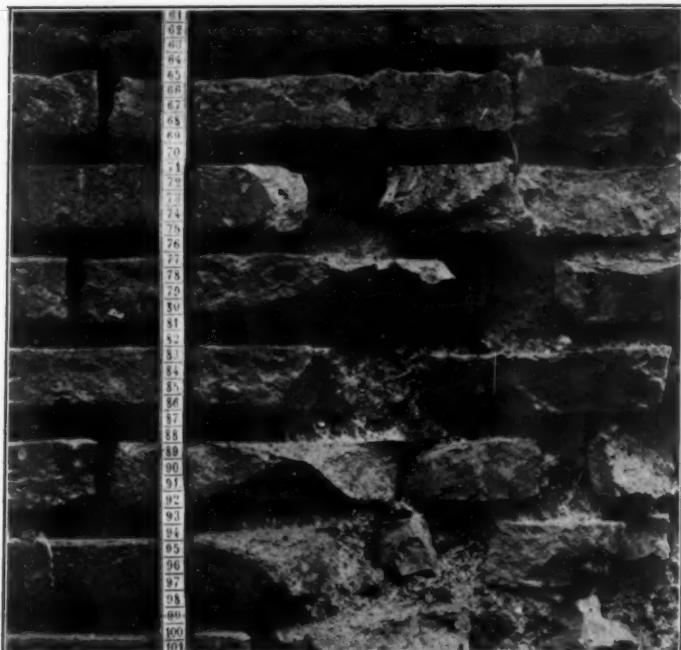


FIGURE 4.—FACING OF TRIANGULAR BRICKS OF THE TIME OF VESPASIAN.²

following period,³ it is firm and tenacious. The *pozzolana-arena* is sharp-angled and clean, though, at times, very coarse. Its predominating color is red, though reddish brown and gray particles appear also.

¹ The character of the *caementa* is very important in the upper stories of the Colosseum, where by contrast the restorations are most easily recognized in the small pieces of dark pumice stone used for the *caementa*.

² From the Colosseum. The distance is 1 m. instead of 1.5 m. as in the other figures.

³ Cf. the periods of Trajan and Hadrian, pp. 415, 418.

The facing is of *opus testaceum* of triangular bricks (Fig. 4), with almost no admixture of old material.¹ The bricks are usually from 3.7 cm. to 4.2 cm. wide. The average width of 100² from the Colosseum is 3.9 cm. and the mean deviation .1 cm. Their length varies from 20 cm. to 30 cm. They are much more homogeneous in composition and of far finer texture than the bricks of the Neronian time. In color they vary from reddish yellow to yellowish red, but are comparatively free from the streaked and mottled appearance so noticeable in the bricks of the time of Nero. They are hard baked and weather well, showing little tendency to disintegration. The horizontal mortar joints are somewhat closer than in the Neronian walls, varying from 1.2 cm. to 1.7 cm. and are carefully raked. The vertical joints average a little less than 1 cm.

Bonding courses do not appear in any of the walls of the time.

The principal monuments or parts of monuments of the time of Vespasian which are made of *opus caementicium* are the following:

The aquae Claudia and Anio Novus: general restorations (71 A.D.).

The Colosseum: the substructures, the inner walls of the first and second stories, and of a part of the third story (78 A.D.).

The porticus (?) north of the Colosseum: fragmentary walls (78 A.D.?).

The cloaca in front of the Colosseum (78 A.D.).³

The porticus Claudia (?).⁴

The principal characteristics by which the *opus caementicium* of the time of Vespasian⁵ is most readily distinguished from that

¹ Cf. the period of Maxentius, p. 431.

² The exact width of the bricks is as follows:

Measurement in centimetres.	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3
Number of bricks.	2	9	11	21	47	4	4	2

³ Narducci, *Fognatura di Roma*, p. 68.

⁴ Platner, *Top.* (1911), p. 439.

⁵ The distinctive characteristics of the whole Flavian age are the same as those of the time of Vespasian, except for the appearance, in the time of Domitian, of bonding courses.

of the Neronian period are: (1) the dirty-white and red color of the mortar, and (2) the width and composition of the bricks. The absence of bonding courses is the only noticeable difference between the *opus caementicum* of the time of Vespasian and that of the later Flavian emperors.

Titus. — Titus, succeeding quietly to his father's rule, sought, for the most part, merely to carry out the undertakings already begun. A few new public monuments were, however, erected by him. The most important of these monuments, two of which were left unfinished at his death, were the thermae Titianae, and the temple of Vespasian with the porticus Deorum Consentium adjoining it. He restored, also, the Marcian and the Claudian aqueducts. Of the other monuments built during his reign, but two are of especial importance, the arches of Titus in the Circus Maximus and on the Velia.

To the art of building not only did Titus' short reign of two years contribute nothing, but the changes so wisely inaugurated by Vespasian lost much of their force in the hands of his less efficient son. This is to be seen most clearly in the hasty choice of materials and in the careless methods of construction, especially noticeable in the porticus Deorum Consentium, to which no less than to the thermae might be applied Martial's well known expression *velocia munera.*¹

As in the time of Vespasian, *opus quadratum* maintained its place in a few monuments, though of little structural value in comparison with the *opus caementicum* with which it was united. The restoration of the aqua Marcia was wholly in *opus caementicum*.

In general type, the *opus caementicum* does not differ from that of the time of Vespasian. For the *caementa*, however, much more old material was used. In the few remaining arches of the restoration of the aqua Marcia inside the city, for example, they consist almost wholly of *opus reticulatum* blocks of yellowish gray tufa, belonging to earlier republican houses in the vicinity. The mortar also is less homogeneous, as well as less tenacious than earlier, on account of the earthy nature of the *pozzolana-arena* used. The facing of the walls does not differ from that of Vespasian's time, except in the

¹ *Spect. 2. Cf. Suet. Tit. 7: thermisque iuxta celeriter exstructis.*

more frequent appearance of older material. The triangular bricks used are normally from 3.7 cm. to 4.1 cm. wide. The average width of 25¹ from the restored arches of the aqua Marcia inside the city and the porticus Deorum Consentium is 3.9 cm. and the mean deviation .1 cm. The joints of mortar, both horizontal and vertical, are very irregular in width.

The monuments or parts of monuments of the time which are built of *opus caementicium* are the following:

The aqua Marcia: the restored arches, especially those near the porta Tiburtina (79 A.D.).²

The temple of Vespasian: the podium.³

The porticus of the Dei Consentes: the lower rooms.⁴

The arch of Titus on the Velia: the foundations.⁵

The thermae of Titus: a few fragmentary walls (?) (81 A.D.).

No specific characteristics have as yet been found by which the *opus caementicium* of this time may be distinguished with certainty from that of the other Flavian emperors.

Domitian. — The new city was arising slowly from the ashes of the fire of Nero, when, in 80 A.D., it suffered from a second conflagration, which not only destroyed many of the newly restored monuments, but swept over much of the city which had before escaped destruction. In the rebuilding of the monuments thus destroyed and the erection of splendid new ones in every part of the city, Domitian found ample opportunity to gratify his feverish passion for building.⁶

But although, in the number and magnificence of its monuments, the reign of Domitian may be regarded as one of the great building periods of Rome, it contributed little to the

¹ The exact width of the bricks is as follows:

Measurement in centi-metres.	3.6	3.7	3.8	3.9	4	4.1	4.2
Number of bricks.	1	1	5	3	13	1	1

² The walls inside the earlier arches of the aqua Marcia are the best work which is left of the time of Titus.

³ The temple was finished by Domitian.

⁴ The porticus seems to have been finished by Domitian.

⁵ The arch was finished by Domitian.

⁶ Plutarch (*Popl.* 15) applies the name *νόσος* to this passion.

development of the art of construction. *Opus quadratum* retains a prominent place, though there is a perceptible decrease in the amount used in the buildings where it is united with *opus caementicium*. A larger number of important monuments are, moreover, built wholly of *opus caementicium*, as, for example, the so-called temple of Augustus, the atrium Vestae of the

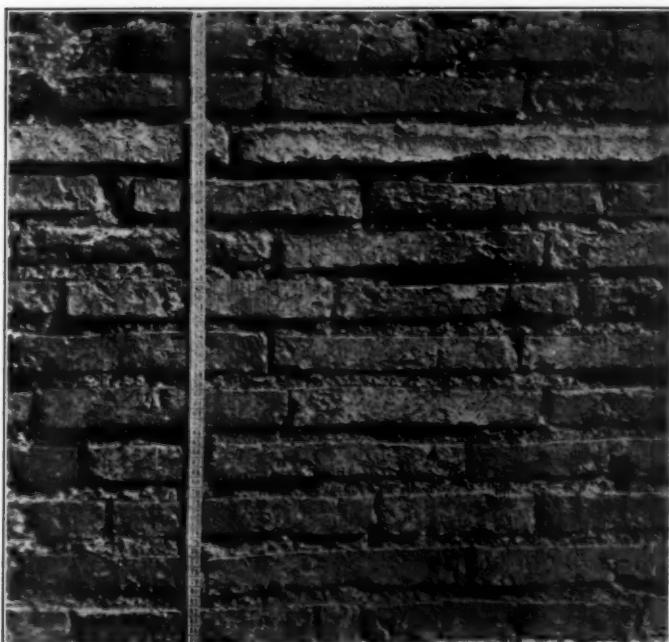


FIGURE 5.—FACING OF TRIANGULAR BRICKS OF THE TIME OF DOMITIAN.¹

second period, the palaces on the Palatine, and the stadium in the Campus Martius.

In type, the *opus caementicium* of Domitian resembles closely that of the time of Vespasian. The *caementa*,² however, show

¹ From the *domus Augustana*. Cf. the previous paper, p. 233, Fig. 1; p. 238, Fig. 4; p. 240, Fig. 6.

² The use of yellowish gray tufa for the *caementa* of one of the walls of the ramp leading from the temple of Augustus to the Palatine is very exceptional. For the *caementa* of the period, see the previous paper, p. 249, Fig. 8.

a larger proportion of broken triangular bricks and marble. The mortar is the same in composition and color, but is somewhat coarser, especially in foundations.

The facing (Fig. 5) does not differ in type from that of *Vespasian*.¹ The bricks are normally from 3.6 cm. to 4.2 cm. wide. The average width of 200² from the so-called temple of *Augustus*, the atrium *Vestae*, the *domus Augustana*, and the *Meta Sudans* is 3.9 cm. and the mean deviation .1 cm. The length varies normally from 25 cm. to 29 cm., never exceeding, so far as seen, 30 cm. The horizontal mortar joints vary from 1.3 cm. to 1.8 cm. and are, normally, raked. The vertical joints are from .5 cm. to 1.2 cm. wide.

Bonding courses are introduced at regular intervals, commonly 16 to 18 or 28 to 30 courses apart, and extend through the whole width of the wall. They are made of heavy *bipedales*, 4.5 cm. to 5 cm. thick, and are of a light yellow or a magenta yellow color.

The monuments or parts of monuments of the period in which *opus caementicium* is used are the following:

The so-called temple of *Augustus*³ and the library adjoining it (before 90 A.D.).

The temple of *Vesta*: the *favissa* (before 91 A.D.).

The atrium *Vestae*: the imperial atrium of the second period (before 91 A.D.).⁴

The Equus Domitiani: the foundations⁵ (91 A.D.).

The *domus Augustana* (before 92 A.D.).

The Hippodromus on the Palatine (before 92 A.D.).

The *Meta Sudans* (97 A.D.).

The temple of *Vespasian*: the portion left incomplete by *Titus*.

¹ In the villa of *Domitian* at *Castel Gondolfo*, the facing is of *opus reticulatum* and *opus testaceum*.

² The exact width of the bricks is as follows:

Measurement in centimetres.	3	3.2	3.4	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3
Number of bricks.	1	1	1	6	10	17	31	29	81	13	9	1

³ This monument will be discussed in a following paper.

⁴ Van Deman, *The Atrium Vestae*, pp. 21 ff. and Plan B.

⁵ See the previous paper, p. 249, Fig. 8.

The porticus Deorum Consentium: the upper story.

The small room between the temples of Vespasian and Concord (?).¹

The house of Avidius Quietus.²

The stadium in the Campus Martius (?) (not yet classified).

The tomb of Domitilla (?) (not yet classified).

The restorations of the aquae Marcia and Claudia (not yet classified).

In the monuments of *opus caementicium* of the time of Domitian, when compared with those of the earlier Flavian period, no distinctive characteristics are found, apart from the use of bonding courses. When compared with the monuments of the succeeding periods, however, the buildings of Domitian's time, like those of the time of the earlier Flavian emperors, are easily distinguished by the type of the mortar, as well as by the use of triangular facing bricks.

VII. THE PERIOD OF THE REVIVAL OF ROOF-TILE FAC- ING (TRAJAN-MARCUS AURELIUS)³

Trajan. — In the monuments which bear the name of Trajan, few in number but conspicuous for their refinement in architectural forms and in construction, one recognizes the expression of a genius but little akin to that which produced the strong but cruder monuments of the Flavian age. It is probable that to the Syrian Greek, Apollodorus, is due the appearance of the new artistic feeling, which, being allowed full play by the emperor Trajan, brought the Roman art of building in concrete to its fullest development.

No distinctly new principles and few, if any, new materials and methods were, so far as can be determined, introduced. On the contrary, Apollodorus, retaining those which had been proved of real value during the preceding half century, evolved from them a higher type of construction, by uniting with them certain materials and methods from the earlier age of Augustus.

¹ This room may have been built by Titus.

² Hülzen-Jordan, *Top.* p. 344, n. 2.

³ The failure to recognize the existence of two distinct periods of roof-tile facing has led to many of the errors in the chronology of the monuments.

The main features in the monuments of the period which mark an advance in the type of construction are :

(1) The abandonment of the use of *opus quadratum* for points of special pressure, as well as for external walls.

(2) The marvellous adaptation not only of the different materials but of the different grades of the same material to the structural demands of the various buildings or parts of a single building.

(3) The finished technique, especially noticeable in the fineness and homogeneous quality of the mortar used in the various parts of the structures, as well as in the regularity and beauty of the facing.¹

(4) The extensive use of sawed roof-tiles not only for the facing but also for the decorative parts even of important public monuments.

While *opus quadratum* continued to be used in certain parts, at least, of many monumental structures, the age of Trajan is especially marked by the extension of the use of *opus caementicium* to all classes of buildings, including aqueducts and other monuments of engineering.²

The *opus caementicium* of this time differs much both in appearance and in quality from that of the Flavian Age. The *caementa* in the foundations, where these are to be seen, are of *selce*, with which is mixed occasionally a little travertine. The pieces are of medium size. In the walls broken bricks of all kinds are found, which are laid in close, though somewhat irregular, rows.³ For the vaults, as earlier, yellowish gray tufa is used. The mortar is of a clean-white and red type, very compact and almost flint-like in hardness. The *arena* is composed of a clean red *pozzolana*, with a slight admixture of reddish brown and gray particles. It is very "sharp," finely sifted, and free from any earthy quality.⁴ The lime is more abundant

¹ Of the concrete monuments in Rome, the most conspicuous for the elegance as well as the excellence of their construction are the forum of Trajan and the amphitheatreum Castrense.

² For the general value assigned to *opus caementicium* faced with *opus testaceum*, see Pliny, *Ep. ad Traianum*, XXXVII, 2; XXXIX, 4.

³ In the aqua Traiana near the city, the reddish brown tufa of which the *opus reticulatum* of the facing is made is used also for the *caementa*.

⁴ It is probable that the *pozzolana* was washed to remove the fine dust so noticeable in the mortar of the time of Augustus. See p. 392.

than earlier and is very clean and white, being excelled in whiteness only by that used in the monuments of the time of Hadrian.

The facing is normally of *opus testaceum* made of broken roof-tiles, with which, in a few monuments, *opus reticulatum* is mixed.¹ These tile bricks are narrower than those of the earlier period. They tend, also, more often, to approach the triangular form. They are normally from 3.3 cm. to 4.1 cm. wide. The average width of 200² from the five more important monuments of the time is 3.7 cm. and the mean deviation .2 cm. Their length varies usually from 20 cm. to 33 cm.³ In composition they differ but slightly from the earlier type. They are of a very fine texture and are well fired, having a metallic ring when struck. Their color is commonly magenta red, though of a slightly lighter tone than that of the earlier tile bricks. A small number also are of a yellowish magenta or clear yellow color.⁴ The width of the horizontal joints of mortar is normally from .7 cm. to 1.5 cm., and of the vertical joints, from .5 cm. to .8 cm. The horizontal joints are carefully raked.

In several monuments of the time, a finer variety of facing is used for the fronts of the walls. The tile bricks used in this facing, however, do not differ in kind from those just described. The horizontal mortar joints are, however, very close, varying from .3 cm. to .7 cm., while the vertical joints are almost invisible.

¹ The most important of the monuments in which *opus reticulatum* is found are the aqua Traiana and the Naumachia (Hülsén-Jordan, *I.c.* pp. 660 f.). It appears also in a single wall in the thermae.

² The exact width of the bricks is as follows :

Measurement in centimetres.	3	3.1	3.2	3.3	3.4	3.5	3.6	3.7
Number of bricks.	1	2	6	12	18	32	20	21
Measurement in centimetres.	3.8	3.9	4	4.1	4.2	4.3	4.5	5
Number of bricks.	28	23	26	7	1	1	1	1

³ Cf. the length of triangular bricks, pp. 402, 406, 409, 413.

⁴ It is possible that these bricks may be made in part from *bipedales*.

Bonding courses of the thick, light-colored *bipedales* used for arches occur regularly in the Forum, but are found less often in the other monuments.

The monuments or parts of monuments of the time which are made of *opus caementicium* are the following:

The thermae of Trajan (of an early date).

The aqua Traiana (109-10 A.D.).¹

The thermae of Sura (109-10 A.D.).²

The arch of Trajan: the foundations.³

The forum of Trajan: the foundations, and the walls of the hemicycles (112-14 A.D.).

The basilica Ulpia: the foundations (112-14 A.D.).

The column of Trajan: the foundations (112-14 A.D.).

The bibliothecae: the foundations and a part of the walls (112-14 A.D.).

The extension of the Circus Maximus: probable walls at the east end.

The Naumachia.⁴

The extension of the aqua Marcia to the Aventine: arches near the Porta Capena.⁵

The amphitheatum Castrense.⁶

The main characteristics which distinguish the monuments of *opus caementicium* of this time from those of the preceding period are (1) the clean-white and red color of the mortar as well as its fine composition and flint-like hardness, and (2) the use of roof-tile facing bricks. No marked differences are found, on the other hand, between the type of construction of this time and that of the time of Hadrian.

Hadrian. — During the early years of his reign, Hadrian conformed his policy in general to that of his predecessor and kinsman. The earlier monuments, therefore, erected under the

¹ The data for the aqua Traiana are not as yet complete.

² The data for the thermae of Sura are as yet incomplete.

³ Pellegrini *ap. Jordan, Top.* I, 2, p. 457, n. 26.

⁴ Hülsen-Jordan, *l.c.* pp. 600 f. Cf. Durm, *Baukunst der Römer* (1904), p. 600, Fig. 766.

⁵ The data for this monument are as yet incomplete.

⁶ The assignment by Hülsen (Hülsen-Jordan, *l.c.* p. 249, n. 74) of the amphitheatum Castrense to Trajan is proved correct by many structural as well as architectural peculiarities of the monument.

influence of the building traditions of the previous period, if not under the immediate direction of its great architect, Apollodorus, differ but little from those of the time of Trajan. The later monuments, on the other hand, erected by the emperor after his years of travel and study of the monuments of other lands, resemble less closely those of the preceding period. Their gain in originality is, however, counterbalanced by a noticeable loss in perfection of form and technique, owing, possibly, to the fall from favor, at this time, of the master architect, Apollodorus.

Although no period did more to assist in the extension of the use of Roman concrete, few, if any, important contributions were made to the history of the development of the construction. The materials and methods of the time of Trajan were, in the main, adopted without change. In a few of the later monuments, however, triangular bricks were again used.¹

Monuments built wholly or in part of *opus quadratum* are rare. For all classes of structures, on the other hand, *opus caementicium* was regularly used.

Throughout the whole period the *opus caementicium* is conspicuous for its uniformity, even in details.² The *caementa* in the foundations are almost entirely of *selce*, except in a very few walls on the Palatine, where a large amount of broken travertine and marble appears. In the temple of Venus and Rome also, tufa was substituted for *selce* in the portions of the podium upon which the lighter parts of the superstructure rested. The *caementa* of the walls are commonly of bricks of various kinds laid in closely packed rows. In the walls of the porticus of the domus Augustana, however, much broken marble and travertine is found. For the *caementa* in vaults, the lighter tufas were used. The mortar is of the clean-white and red type, and is conspicuous for its fine composition, cohesiveness, and rock-like hardness. The *pozzolana-arena* is sharp-angled, fine, and noticeably clean, being possibly washed as well as sifted. Its predominating color is red, though,

¹ See below, p. 420.

² This uniformity, which is noticeable also in the buildings of the period in other lands, was probably due to the personal interest of the emperor in the erection of public monuments.

in certain monuments, considerable reddish brown and gray appear. The lime is exceptional in its fine quality and clear white color.

The facing of the greater number of the monuments of the period in Rome¹ is *opus testaceum* (Fig. 6), though in a few



FIGURE 6.—ROOF-TILE FACING OF THE TIME OF HADRIAN.²

cases *opus reticulatum* appears.³ In the more important monuments, the *opus testaceum* is made wholly of broken roof-tiles of the same type as those used earlier. These bricks do not differ materially in width from those of the time of Trajan,

¹ The use of *opus reticulatum* is more common in the vicinity of Rome than in the city itself. In the villa at Tivoli *opus reticulatum*, *opus reticulatum* with *opus testaceum*, and *opus testaceum* are all used.

² From the Pantheon.

³ *Opus reticulatum* appears in the walls at the northeast corner of the Palatine, and in the domus Cilonis (Hülsen-Jordan, *I.c.* p. 188, n. 15 a).

varying normally from 3.3 cm. to 4 cm. The average width of 100¹ from the Pantheon, which may be accepted as typical, is 3.7 cm. and the mean deviation .2 cm. They vary in length from 25 cm. to 35 cm.² In composition, texture, and color, they resemble, in general, the tile bricks of the previous period. They are, as a rule, however, much less carefully fired. The mortar is somewhat finer than that used in the body of the structure. The horizontal joints are usually from 1 cm. to 1.6 cm. wide and are carefully raked. The vertical joints vary from .5 cm. to .9 cm.

In a small number of walls of the time in the *domus Augustana* on the Palatine,³ the facing is of triangular bricks. These triangular bricks, while they resemble, in general, those of the earlier period, are marked by certain distinctive characteristics.⁴ They differ noticeably in width, seldom exceeding 3.6 cm. or 3.7 cm. The average width of 25,⁵ which are fairly typical, is 3.5 cm. and the mean deviation .1 cm. In length they show, naturally, no difference from the earlier type, since they are made from similar *bessales*, 20–22 cm. square. They are, however, more homogeneous in composition, of finer texture and, as a rule, better puddled; they are equally well fired. In color they vary, as earlier, from yellowish red to reddish

¹ The exact width of the bricks is as follows :

Measurement in centimetres.	2.8	3	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4	4.1	4.2	4.3
Number of bricks.	1	1	5	9	15	10	14	16	6	16	4	2	1

² As a means of distinguishing the various types of facing bricks, the length is very important.

³ A part of the cross walls of the colonnade on the west. For one of these walls, see the previous paper, p. 238, Fig. 4. Other important walls of the same type will be discussed in a later article.

⁴ Cf. the triangular bricks of Claudius (p. 402), Nero (p. 405), and the Flavians (p. 409).

⁵ The exact width of the bricks is as follows :

Measurement in centimetres.	3.2	3.3	3.4	3.5	3.6	3.7	3.8
Number of bricks.	2	5	4	5	4	2	3

yellow, but are largely free from the mottled and streaked appearance especially characteristic of the Neronian bricks. The mortar in the body of the structure and in the facing is the same as that in the walls faced with roof-tiles.

The monuments or parts of monuments of this time for which *opus caementicium* was used are the following :

The temple of Trajan : the foundations (*ca.* 119 A.D.).¹

The Pantheon (126 A.D. or later).

The thermae of Agrippa : the walls immediately behind the Pantheon (126 A.D. or later).²

The temple of Venus and Rome : the podium (135 A.D.).

The *domus Augustana* : the cross walls of the colonnade and a number of walls inside the building (135 A.D. or later).

The mausoleum of Hadrian (138 A.D.).

The atrium Vestae : the imperial atrium of the third period.³

The *domus Cilonis*.⁴

The walls at the northeast corner of the Palatine.⁵

The more regular use of bonding courses is the only marked characteristic by which the monuments of *opus caementicium* of the time of Hadrian may be distinguished from those of the periods immediately preceding and following it.

Antoninus Pius-Commodus. — The number of monuments of the time of the Antonines which are made either wholly or in part of *opus caementicium* is very small. The type of construction in these monuments is identical, except for the absence of bonding courses, with that used in the time of Hadrian.

The only important monuments of the time, as yet identified, in which *opus caementicium* appears are :

The temple of Antoninus and Faustina : the foundations.

The atrium Vestae : the imperial atrium of the fourth period.⁶

¹ *Bull. d. Ist.* 1869, p. 237; *Not. Sac.* 1886, pp. 158 ff.

² No trace has been found as yet of the original walls of the time of Agrippa.

³ Van Deman, *l.c.* pp. 33 f. and Plan C.

⁴ Hülzen-Jordan, *l.c.* p. 188, n. 15 a.

⁵ These walls are correctly assigned by Richter (*Top.* p. 151) to the time of Hadrian.

⁶ Van Deman, *l.c.* p. 42 and Plan D.

VIII. THE PERIOD OF FACING BRICKS OF BROKEN BIPE-
DALES (SEPTIMIUS SEVERUS-DIOCLETIAN)¹

Septimius Severus-Alexander Severus.—More than a century had elapsed after the great fire of Titus, when Rome suffered again severely, in the reign of Commodus, from two fires, which laid waste a large part of the centre of the city. To the rebuilding of the monuments which had been wholly or in part destroyed, Septimius Severus and the other rulers of his house devoted much energy. Many magnificent new monuments also were erected by them, conspicuous among which were the palaces on the Palatine, the Septizonium, the thermae of Severus, and the thermae of Caracalla with the aqua Antoniniana.

The revival of building activity which found expression in these monuments was accompanied by certain important changes in the materials and methods of construction, which, though advantageous from the standpoint of utility, marked a decline in the beauty of the technique. The most striking of these changes are (1) the adoption of various kinds of tufa in place of bricks for the *caementa* in the body of the structures, with the use of pumice stone for the vaults, and (2) the introduction of facing bricks made of *bipedales*.

Opus quadratum was used very rarely and, except in a few monuments,² wholly for decorative purposes. For the structural parts of all classes of buildings, *opus caementicium* was almost universally used.

The *opus caementicium* varies little in type throughout the period. The *caementa* of the foundations and other massive parts of the structures are, where seen, of *selee*, except in the temple and atrium of Vesta,³ where much broken and charred marble, travertine, and tufa appear, the refuse materials from the earlier buildings destroyed by the fire of 191 A.D. In the walls, the harder varieties of tufa are used frequently for

¹ It is probable that the monuments of Aurelian are to be excluded from this group. See p. 427.

² The most important of these is the arch of Severus in the Forum, the foundations of which are of *opus quadratum*.

³ The atrium Vestae of this period is throughout of a very careless type of construction.

caementa in place of bricks. In the vaults, much pumice stone¹ appears, in addition to the yellowish gray tufa. The *caementa* in all parts of the buildings are noticeably smaller and less frequent than earlier. The mortar is a poorer variety of the red and white type of the preceding period. The *pozzolana-arena* is



FIGURE 7.—BRICK FACING OF THE TIME OF SEPTIMIUS SEVERUS.²

clean and very coarse, giving to the mortar its peculiar speckled appearance.³ The predominating color is red, though reddish brown and gray appear also. The lime is clean, though less white than in the preceding period.

The facing bricks are made regularly of broken *bipedales* (Fig. 7). In the atrium Vestae, however, and in the upper part

¹ Good examples of the use of pumice stone are to be found in the thermae of Caracalla and in the upper corridors of the Colosseum.

² From the palace on the Palatine. Cf. the previous paper, p. 233, Fig. 1; p. 240, Fig. 6.

³ See Fig. 7.

of the palace on the Palatine,¹ a considerable number of the earlier tile bricks are used, with a small amount of other older material. The shape of the bricks tends to approach the triangular form but the fronts only are sawed. They vary in



FIGURE 8.—FACING BRICKS OF THE TIME OF CARACALLA.²

width, in the monuments of Septimius Severus, from 2.3 cm. to 3 cm. The average width of 100³ from the palace on the

¹ On account of the later restorations the original walls of the upper part of the palace are very hard to determine.

² From thermae of Caracalla.

³ The exact width of the bricks is as follows:

Measurement in centimetres.	1.8	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7
Number of bricks.	1	1	2	2	3	1	12	8	14
Measurement in centimetres.	2.8	2.9	3	3.1	3.2	3.3	3.5	3.7	3.8
Number of bricks.	8	5	24	4	4	4	4	1	2

Palatine and the restored portions of the *arcus Neroniani* is 2.8 cm., and the mean deviation .26 cm. In the monuments of the later rulers of the family, a heavier type of *bipedales* was used (Fig. 8); the facing bricks are, therefore, wider, varying normally from 2.9 cm. to 3.5 cm. The average width of 100¹ from the thermae of Caracalla is 3.2 cm. and the mean deviation .2 em. Owing to the nature of the material, the length of the bricks varies greatly, but is usually from 25 cm. to 33 or 34 cm.²

Though these facing bricks resemble most nearly those made of roof-tiles, their composition is much less homogeneous, and the materials are coarser and less well mixed. Their texture is less fine, also, approaching at times that of the triangular bricks. They are, however, hard and carefully fired. Their color varies from the dark magenta of the roof-tile facing bricks to a yellowish magenta or magenta yellow. The mortar is of the same type as in the body of the walls, though at times a trifle finer. The horizontal joints are wide, increasing in proportion as the width of the bricks diminishes. They vary usually from .4 cm. to 2.5 cm., and the vertical joints from .5 cm. to 2 cm.

Bonding courses of the same type of *bipedales*³ as those used for the facing bricks occur regularly in all the monuments.

A few of the walls near the caldarium in the thermae, and the lower part of a few of the remaining arches of the aqua Antoniniana are faced with bricks made from a heavier type of *bipedales*.⁴ These bricks are from 3.5 cm. to 4.5 cm. wide, and from 20 cm. to 35 cm. long. They are coarse in composi-

¹ The exact width of the bricks is as follows:

Measurement in centimetres.	2.2	2.3	2.5	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
Number of bricks.	3	1	1	1	1	4	23	13	14	15	9	9	1	4	1

² In 150 bricks, chosen in groups of 5 or 10, the length of 39 exceeds 31 cm., the limit of the length of triangular bricks. Cf. p. 406, n. 1.

³ The bonding courses of the atrium Vestae are of the earlier yellow type.

⁴ The presence of these bricks has led to some confusion concerning the date of this part of the thermae. The walls in which they are found are, however, of the same period as the rest of the building.

tion and of loose texture, but are usually well fired. Their color varies from yellow or pinkish yellow to light magenta.

The principal monuments or parts of monuments made of *opus caementicium* which belong to this time are the following:

Restored portions of the *arcus Neroniani* (201 A.D.).

Restored portions of the Pantheon: walls on the west side (202 A.D.).

The palace of Septimius Severus on the Palatine: the arches of the Belvedere and the upper rooms adjoining the stadium (ca. 203 A.D.).¹

Restored portions of the Hippodromus on the Palatine (ca. 203 A.D.).

The temple of Vesta: the upper portion of the podium (early in the reign of Septimius Severus).

The atrium Vestae: the imperial atrium of the fifth period (early in the reign of Septimius Severus).²

The wall in the rear of the *templum Sacrae Urbis*.

The thermae of Caracalla (216 A.D.).

The aqua Antoniniana: arches behind the thermae of Caracalla (212-13 A.D.).

The peribolus of the thermae of Caracalla (built by Elagabalus and Alexander Severus).

The aqua Alexandrina (226 A.D.).³

Restored portions of the Colosseum: the substructures and a large part of the upper stories.

The restored arches of the aqua Marcia near the porta Tiburtina.⁴

The main characteristics by which the monuments of *opus caementicium* of this time may be distinguished from those of the earlier periods are: (1) The smallness of the size of the *caementa* in all parts of the structure, and the use for them of various varieties of tufa and of pumice stone, (2) the use of facing bricks made of *bipedales*, and (3) the decrease in the width of the bricks as well as the corresponding increase in the

¹ The work of Septimius Severus in this part of the Palatine is much less extensive than is usually held.

² Van Deman, *l.c.* p. 45 and Plan E.

³ The data concerning the aqua Alexandrina are not as yet complete.

⁴ The data concerning the restoration of the aqua Marcia are not as yet complete.

width of the mortar. No very noticeable differences exist between the monuments of this period and of the two periods immediately following.

Aurelian. — On account of the vast amount of the material to be considered, no final conclusions have as yet been reached concerning the materials and methods of construction used in the monuments of the time of Aurelian.¹

Diocletian. — Of the monuments rebuilt or restored by Diocletian after the fire of 283 A.D., the curia alone displays indubitable evidence of his work. By rare good fortune, however, the great monument bearing his name, for which a whole district of the city was destroyed and upon which vast sums of money were expended,² is still in large part preserved. From this monument, with the curia, are derived the data upon which the conclusions here given are based.

While showing a rapid decline in technical finish and elegance, the thermae, and the curia in a lesser degree, are yet conspicuous in the maintenance of a certain uniformity in materials and methods entirely lacking in the great concrete structures of Maxentius, erected less than a decade later. The thermae and the curia are the last monuments also in which the materials, even of the external facing, belong in any considerable part to the time of the erection of the monument.

In general type, the *opus caementicium* of the body of the structures is not noticeably different from that of the earlier part of the century. The *caementa* of the walls³ consist in large part of small pieces of brick of every variety laid in comparatively even rows. In the thermae are found also, at times, a considerable quantity of broken pieces of tufa and other stones, many of which show their earlier use in the walls of *opus reticulatum* of the republican and Augustan houses destroyed to give place for the baths.⁴ The *caementa* of the vaults of the thermae⁵ are of yellowish gray and light red

¹ The larger part of the existing remains of the Aurelian wall are the work of Aurelian, and not, as is generally held, of Honorius. The thermae of Caracalla were also extensively restored by him.

² C.I.L. VI, 1130 (= 31242): *Thermas . . . coemptis aedificiis pro tanti operis magnitudine omni cultu perfectas Romanis suis dedicaverunt.*

³ No foundations are visible.

⁴ See above, n. 2.

⁵ No vaults are visible in the curia.

tufa. The pieces are very small and are laid in horizontal rows held together by courses of *bipedales* inserted at regular intervals. The mortar differs little from that of the time of Severus and Caracalla, being a poorer variety of the white and red type.¹ While not so homogeneous as earlier, it is firm and



FIGURE 9.—BRICK FACING OF BIPEDALES OF THE TIME OF DiOCLETIAN.²

tenacious. The *pozzolana-arena* is coarsely sifted but clean. The color is more commonly red, though with a considerable mixture of brown and gray.

The walls are faced almost entirely with bricks made of *bipedales* of the period, similar to those which appear in the arches and bonding courses (Fig 9). Roof-tiles and bricks of other kinds appear occasionally. The width of the facing bricks, as of the *bipedales* from which they are made, is not uniform, varying usually from 3 cm. to 4 cm. The average width of

¹The mortar is not so friable as that of the first century, which is called "dirty-white and red."

²From the thermae of Diocletian.

100¹ from the thermae and the curia is 3.5 cm., and the mean deviation is .4 cm. These facing bricks are usually shorter than those made of *bipedales* of the period of Severus and Caracalla, being usually but 20 cm. to 25 cm. long. In composition and texture also, they are inferior to the earlier type, resembling, at times, the badly puddled triangular bricks of the time of Nero. They are, however, as a rule, very hard and weather well. Their color varies from a deep almost brownish magenta to a magenta yellow. A few narrow bricks of a clear yellow tone appear, similar to those which are found in great numbers in the buildings of Aurelian. The mortar does not differ from that in the body of the structure. The horizontal joints are from 1.5 cm. to 3 cm. wide, in many cases exceeding 3.5 cm. The vertical joints show the same lack of uniformity, varying from .6 cm. to 3 cm.

Bonding courses of *bipedales*, similar to those from which the facing bricks are made, occur at regular intervals in all the walls.

The only monuments of *opus caementicium* of which remains exist are the curia Julia and the thermae of Diocletian.

Of the few marked characteristics which distinguish the monuments of *opus caementicium* of this period from those of the period of Severus and Caracalla, the most important are the irregularity in the size of the bricks and the increase in the width of the mortar joints. The monuments are easily distinguished from those of the following period by the comparative uniformity in the materials used, especially in the facing bricks.

IX. THE PERIOD OF MIXED FACING BRICKS (MAXENTIUS—)

Maxentius.—In the midst of his struggle for supreme rule, Maxentius found time to plan a number of great monuments,

¹The exact width of the bricks is as follows :

Measurement in centimetres.	2.3	2.4	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4
Number of bricks.	1	1	1	2	1	3	12	7	6	8	4
Measurement in centimetres.	3.5	3.6	3.7	3.8	3.9	4	4.1	4.3	4.4	4.5	
Number of bricks.	23	3	2	5	2	12	1	1	1	4	

the greatest of which, however, the basilica and the temple of Romulus,¹ were left for his conqueror, Constantine, to finish. These two monuments, together with the circus of Maxentius and the temple of Venus and Rome, which was rebuilt by Maxentius, are still, in large part, preserved.

Of the comparative uniformity in materials and methods of construction which distinguish the work of Diocletian, but

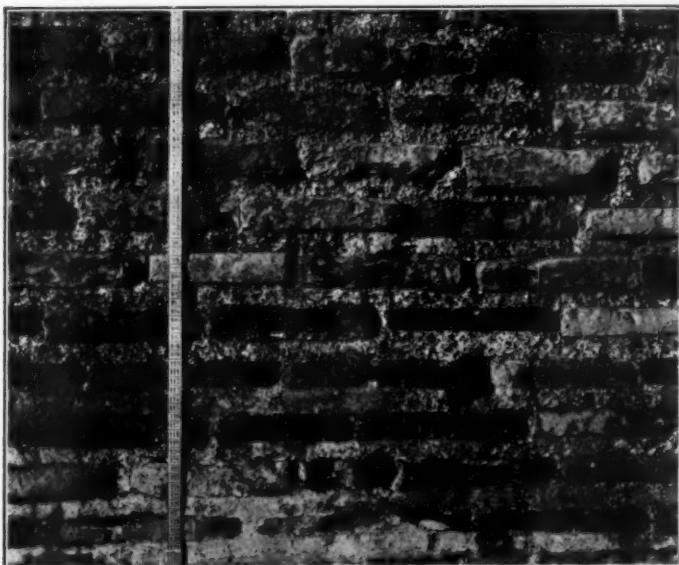


FIGURE 10.—BRICK FACING OF THE TIME OF MAXENTIUS.²

little trace is found in the conglomerate mass of broken materials of every period of which the monuments of Maxentius consist. For the *caementa* of the foundations, stones of every variety are used, with a smaller amount of brick. The pieces are not of uniform size and are laid with no attention to order. In the walls the *caementa* are, more commonly, of bricks of many kinds and of many periods laid in rough rows; in the

¹ It is possible that the temple was completed, though the name of Constantine was later attached to it.

² From the basilica of Constantine.

temple of Venus and Rome, however, very small *caementa* of tufa appear. For the vaults, bricks as well as tufa of several kinds are used. The mortar, by which the heterogeneous mass of materials is welded together, exceeds in amount that of the previous periods. It is irregular and coarse in composition, and less firm and hard than earlier. The color is not uniform, though red predominates. The lime is of medium good quality.

The facing, except in the circus of Maxentius, is composed of bricks of every type and period (Fig. 10). Among those which appear most conspicuously are the roof-tiles of the first and second centuries, the *bipedales* of the Severi and Diocletian, and, though more rarely, the triangular bricks of the first century. The courses of bricks show no regularity, being evened up by the wide layers of mortar. The average width of 100¹ bricks from the temple of Romulus, the basilica, and the temple of Venus and Rome, which are fairly typical, is 3.5 cm. and the mean deviation .6 cm. The length varies from a few centimetres to 35 or 40 cm. The horizontal mortar joints vary commonly from 1.5 cm. to 3.5 cm. and are often, especially below the bonding courses, 4 cm. or more.

Bonding courses, which are composed of *bipedales* of many widths, appear regularly.

In the circus of Maxentius, the facing is in large part of *opus mixtum*, the materials of which are wholly without uniformity.

The monuments or parts of monuments made of *opus caementicium* which may be assigned to this time are the following:

The temple of Venus and Rome: the entire superstructure (ca. 308 A.D.).

The temple of Romulus (finished by Constantine?).

The basilica of Constantine (finished by Constantine).

¹ The exact width of the bricks is as follows :

Measurement in centimetres.	2.1	2.3	2.5	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4
Number of bricks.	1	2	7	2	2	1	17	3	7	4	3
Measurement in centimetres.	3.5	3.6	3.7	3.8	4	4.1	4.2	4.3	4.5	4.7	5
Number of bricks.	10	2	2	3	13	4	6	1	6	1	3

Constantine. — In monuments of the time of Constantine, so far as it has yet been possible to classify them, the type of construction is identical with that of the monuments of Maxentius.

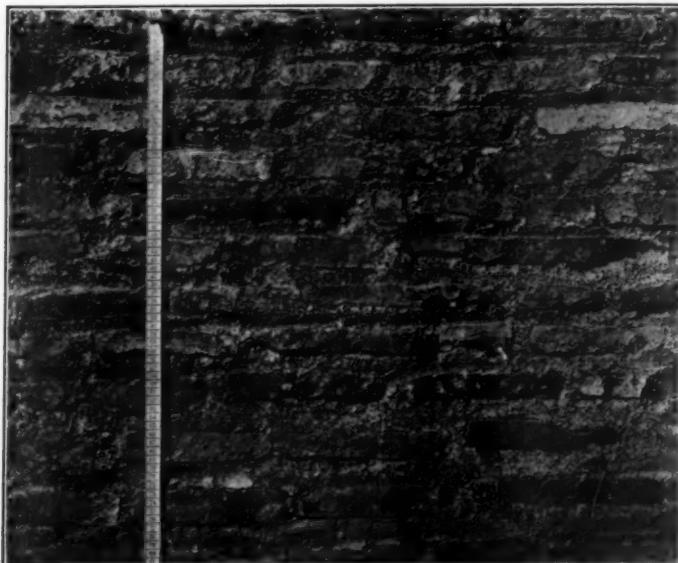


FIGURE 11.—BRICK FACING OF THE SEVENTH CENTURY.¹

No classification of the monuments later than the period of Constantine has as yet been undertaken. The general type of the facing is shown in the illustration above.²

ESTHER BOISE VAN DEMAN.

ROME, June, 1912.

¹ From the column of Phocas.

² Fig. 11.

1912

January—June

ARCHAEOLOGICAL NEWS¹

NOTES ON RECENT EXCAVATIONS AND DISCOVERIES; OTHER NEWS

WILLIAM N. BATES, *Editor*

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GENERAL AND MISCELLANEOUS

BULGARIA.—Two Variants of the Type of Artemis the Huntress.—In *R. Ét. Gr.* XXV, 1912, pp. 24–41 (2 figs.), G. SEURE discusses two variants of the type of Artemis the Huntress. One of these is a bronze statuette 6 cm. high found near the village of Sveti Kirilovo, Bulgaria, and represents Artemis standing wearing a helmet. The attributes held in the hands are missing. The other is a small fragment of a relief representing Artemis upon a galloping deer found at Panagia near Philippopolis. He shows that Apollo-Hero and Artemis-Bendis were a pair of deities closely associated in the popular imagination and that they were sometimes given the same attributes.

MACEDONIA.—Recent Explorations.—Messrs. Wace and Thompson have during the past season explored various sites in the districts of Orestis and Elemtiotis, as well as in Perrhaebia, Macedonia. At Elassona two prehistoric settlements were found similar to those in Thessaly, in one were vases of Late Minoan II style. Another settlement was found on the Haliakmon near Serije, and not far away an Early Iron Age nécropolis. Three Greek settlements were discovered in Orestis; and in northern Perrhaebia a long Latin inscription of Trajan, dating from the year 101, which is of historical and topographical importance. (*Kunstchr.* March 22, 1912, col. 316.)

NECROLOGY.—Philippe Berger.—Philippe Berger, formerly professor at the Collège de France, librarian of the Institute, member of the Académie des Inscriptions, senator of Belfort, died suddenly at Paris, March 24, 1912,

¹ The departments of Archaeological News and Discussions and of Bibliography of Archaeological Books are conducted by Professor BATES, Editor-in-charge, assisted by Professor C. N. BROWN, Miss MARY H. BUCKINGHAM, Dr. L. D. CASKET, Professor HAROLD R. HASTINGS, Professor ELMER T. MERRILL, Professor FRANK G. MOORE, Professor CHARLES R. MOREY, Dr. JAMES M. PATON, Professor LEWIS B. PATON, Professor A. S. PEASE, Professor S. B. PLATNER, Dr. N. P. VLACHOS, Professor ARTHUR L. WHEELER, and the Editors, especially Professor MARQUAND.

No attempt is made to include in this number of the JOURNAL material published after June 30, 1912.

For an explanation of the abbreviations, see pp. 160–161.

at the age of 64 years. He succeeded Renan as editor of the *Corpus Inscriptionum Semiticarum* and as professor of Hebrew language and literature at the Collège de France. He was the author of an *Histoire de l'écriture dans l'antiquité* (2d ed. 1891) and numerous articles. (S. R., *R. Arch.* XIX, 1912, p. 347.)

Joseph Demargne.—Joseph Demargne, former member of the École d'Athènes, died at Venice, in Provence, January 22, 1912, in his forty-second year. He had carried on explorations, especially in eastern Crete, the results of which were published in *B. C. H.* and elsewhere. (*R. Arch.* XIX, 1912, pp. 149 f.)

William Watson Goodwin.—The death of Professor Goodwin, which took place June 15, 1912, brought to an end a long and useful life and took from our country one of its most distinguished scholars. William Watson Goodwin was born at Concord, Mass., May 9, 1831. In 1851 he was graduated from Harvard College. After two years of further study he went to

Germany, where he studied at the Universities of Berlin, Bonn, and Göttingen, receiving the degree of Ph.D. at Göttingen in 1855. He was tutor at Harvard College 1856-1860, Eliot Professor of Greek Literature 1860-1901, Professor Emeritus 1901-1912. He received the honorary degree of LL.D. from Amherst (1881), Cambridge, England (1885), Columbia (1887), Edinburgh (1890), Harvard (1901), Chicago (1901), and Yale (1911), that of D.C.L. from Oxford (1890), and that of Ph.D. from Göttingen (1905), fifty years after he obtained his first degree of the same grade there. He was the first Director



FIGURE 1.—WILLIAM WATSON GOODWIN.

of the American School of Classical Studies at Athens (1882-1883), and retained his interest in the School to the end. He was twice (1871-2 and 1884-5) president of the American Philological Association, was an honorary member of the Society for the Promotion of Hellenic Studies, the Philological Society of Cambridge, England, the Archaeological Society and the Academy of Sciences at Athens, and a member of the Imperial German Archaeological Institute. In 1903 he was president of the American Academy of Arts and Sciences. His chief works are the *Syntax of the Moods and Tenses of the Greek Verb* (1860; rewritten and enlarged, 1889), a *Greek Grammar* (first edition 1860), and editions of Demosthenes *On the Crown* and *Against Midias*. His contributions to philological periodicals were numerous and valuable. It is not too much to say that in the *Moods and Tenses* he offered to English-reading students the first clear and complete statement of an important part of Greek syntax, and his *Greek Grammar* was for many years the most valuable grammar of the Greek language available in this country. Throughout his long life he devoted himself to the encouragement and development of the study of

Greek, especially at Harvard College, and his faith in the value of Greek studies is shown by a bequest for the endowment of a Fellowship to be given to students of Greek literature or archaeology. As a man Professor Goodwin was strong, pure, and kind. He was full of sympathy for those who needed it; a faithful friend, and a courteous opponent. His loss is felt by the world of scholars and deeply mourned by many pupils and friends.—H. N. F.

Heinrich Nissen.—At Bonn, February 29, 1912, Professor Heinrich Nissen died at the age of 73 years. He had taught successively at Marburg, Göttingen, Strassburg, and Bonn. His best-known works are: *Das Templum* (1869), *Pompeianische Studien* (1877), and *Italische Landeskunde* (1883, 1902). In Iwan Müller's *Handbuch* he wrote the section on Greek and Roman metrology. (S. R., *R. Arch.* XIX, 1912, p. 349.)

Karl Penka.—Gymnasialprofessor Karl Penka died, aged 65 years, at Vienna, February 10, 1912. In 1887 his work *Die Herkunft der Aryer* appeared, and after that time he wrote much on the same subject. He was the first to make use of the data furnished by prehistoric archaeology for the solution of the Aryan question. (S. R., *R. Arch.* XIX, 1912, p. 349.)

Joseph Ladislas Picz.—One of the chief workers in the field of Slavic (especially Bohemian) archaeology, Joseph Ladislas Picz, died at Prague, December 18, 1911. He was professor of history in the University of Prague and author of important works on Bohemian archaeology. (*R. Arch.* XIX, 1912, p. 148.)

Ernest S. Roberts.—The death is announced of Dr. Ernest S. Roberts, master of Caius College, Cambridge. He was the author of an *Introduction to Greek Epigraphy* in two volumes, the second written in collaboration with Professor E. A. Gardner. (*Nation*, July 4, 1912, p. 18.)

Theodor Schreiber.—In March, 1912, Theodor Schreiber died at Leipzig, at the age of 64 years. He was director of the Museum of Art and *ausserordentlicher* professor of archaeology. Among his writings are: A catalogue of the Villa Ludovisi (1880), a treatise on the Grimani reliefs at Vienna (1888), a publication of Hellenistic reliefs (2 vols., 1889 and following), a *Bilderatlas zum Altertum* (1885), and numerous important articles in periodicals and the like. During the last few years he was engaged in excavations at Alexandria, carried on at the expense of Mr. Sieglin. Two elaborate volumes have already appeared (*Expedition Ernst Sieglin, Die Nekropole Kom-esch-Schufaka*, 1908), containing some of the results of this expedition. (S. R., *R. Arch.* XIX, 1912, p. 348.)

W. Wroth.—W. Wroth, the numismatist, of the British Museum, has died at the age of 53. (*Klio*, XI, 1911, p. 511.)

THRACE.—Inscriptions.—In *R. Arch.* XVIII, 1911, pp. 423-449 (fig.), GEORGES SEURE discusses eighteen inscriptions in Thrace. One is in Latin, the others in Greek. All are votive or dedicatory. Three inscriptions from Mesembria furnish some information relative to the strategi, the taxiarchs, and three classes of guards (*άμερινοί, νικτερινοί* and *περιόδοι*). This is the second article in a series (see *A.J.A.* XVI, 1912, p. 113). *Ibid.* XIX, 1912, pp. 319-336, twenty inscriptions are published. Seven contain (or contained) names of emperors (Septimius Severus, his two sons and his wife; Caracalla; Diocletian and Maximianus; Flavius Severus II and Maximinus Daza [reinscribed to Constantine the Great, Constantine II,

Constantius II, and Constans]; Constantine II, Constans, and Constantius II [probably]; two emperors whose names have disappeared). One inscription is in honor of Publius Harpocration, who is called in another inscription "Publius Aelius Harpocration, also Proclus." This designated a statue erected by the Alexandrians at Perinthus. Two others are honorary. The rest are *termini*, five of which (of Byzantine times) are republished from the *Θρακική Ἐπετηρίς*.

MESEMBRIA. — **Recently Discovered Graves.** — In *Ath. Mitt.* XXXVI, 1911, pp. 308-316 (5 figs.), G. KAZAROW describes three graves recently discovered near Mesembria. The most important object found in them was a bronze hydria of the fourth century B.C., with a representation in relief of Boreas and Oreithyia below the handle.

EGYPT

THE GERMAN EXCAVATIONS OF 1911. — In *Klio*, XII, 1912, pp. 116-121, L. BORCHARDT describes the excavations carried on by German archaeologists in Egypt in 1911. At Tell-el-Amarna eighty houses were excavated, corresponding in plan to those already known from tombs of the Middle Kingdom. Among the objects found was a short bronze sword (not Egyptian, see p. 448), part of the leather harness of a war chariot, an axe blade, etc. Several of the houses were used as tombs in the eighteenth dynasty. At Gurna three and perhaps four chapels of the late twentieth or twenty-first dynasty were found, and below them a building of Thutmosis IV. Several tombs were discovered, in one of which were the sarcophagi of a granddaughter and great-grandson of Takelothis I. In *Ber. Kunsts.* XXXIII, 1912, cols. 191-200 (13 figs.), MÖLLER describes these sarcophagi which are now in the museum in Berlin.

ABYDOS. — **Discoveries in 1911.** — During the last campaign at Abydos an undisturbed tomb of unbaked brick, dating from Roman times, was found. In it were twelve sandstone sarcophagi containing mummies, still bright with blue and gold decoration. In another place a woman's skeleton was found in the sand with bracelets of cowry shells and carnelian beads, and on one of the fingers a ring with five scarabs. A silver nose ring, and various ornaments of shells, glass beads, copper and iron rings, etc., lay near by. A twelfth dynasty tomb was not far away. (*Kunstchr.* March 22, 1912, col. 316; *Nation*, February 8, 1912, p. 145.)

EL GERZEH. — **Pre-dynastic Iron Beads.** — In *R. Arch.* XIX, 1912, pp. 255-259 (2 figs.), G. A. WAINWRIGHT describes, with illustrations, a grave at El Gerzeh in which, among other things, were some iron beads. This grave, excavated in the winter of 1911-1912 for the British School of Archaeology in Egypt, is clearly pre-dynastic, as is a second grave (briefly described) which also contained iron beads.

MEROE. — **Recent Discoveries.** — At Meroe, during the past season, Dr. Garstang has made some very interesting discoveries. His work there, carried on with the help of a light railway lent him by the Sudan Government, has led to the excavation and plotting of the greater part of the Ethiopian city, and the laying bare of the royal palace with a very elaborate system of baths. These do not seem to be on the Roman or "Turkish bath" model, and, at any rate, no means of heating has yet been found.

On the contrary, they appear to be more on the plunge-bath principle, and one of them is supplied with a system of inlets from above the water-level of the bath itself, which must have produced a perfect cascade. The walls are ornamented with rows of colored tiles, decorated in relief, all still in their original positions. He also found a very small, but perfect Roman temple, and many stone statues in a new style of art, evidently copied from the Greek, but showing strong African peculiarities. A Venus in the Medici attitude with a tendency to steatopygy is among the more curious examples of this. (*Athen.* March 16, 1912, p. 319; *Nation*, March 7, 1912, p. 245.)

TELL-EL-AMARNA.—**Destruction of a Painted Pavement.**—News has been received of the wanton destruction of a famous painted stucco pavement at Tell-el-Amarna. The pavement was discovered by Flinders Petrie in 1891, while excavating on this site, which was built about 1360 B.C. by King Akhenaten. The pavement was decorated with paintings representing ponds with birds and animals, rendered in a very naturalistic style, and was one of the most valuable monuments of the realistic tendencies in Egyptian art during this period. The deed appears to have been perpetrated by a discharged watchman. (*Nation*, February 22, 1912, p. 196.)

BABYLONIA AND ASSYRIA

BABYLON.—**A General Account of the Excavations.**—Many years have now passed since the German explorers began excavations in the ruins of Babylon, and though nothing very striking in the way of inscriptions has as yet been issued, the results, especially from an architectural point of view, have been satisfactory, and even gratifying. The ground to be explored, however, is so extensive that much time and research will be needed before a really definitive account of the ruins can be made. In *S. Bibl. Arch.* XXXIV, 1912, pp. 83–106, T. G. PINCHES gives an account of the results that have been obtained thus far, mainly an abridgment of the description of Babylon's temples, as published by Dr. Robert Koldewey under the title of 'Die Tempel von Babylon und Borsippa.'

KIS.—**The Earliest Sumero-Accadian Dynasties.**—In *C. R. Acad. Insc.* 1911, pp. 606–620 (2 pls.), Father SCHILT publishes a clay tablet probably from Kiš dating from the time of Hammurabi and containing a list of kings of the earliest Sumero-Accadian dynasties. First comes the first dynasty, of Opis, containing the names of six kings, with the years they reigned, 99 in all. Then the second dynasty, of Kiš, with eight kings ruling in all 586 years. The third dynasty, of Uruk, had one king who ruled 25 years. The fourth, of Agade, had twelve kings ruling 197 years; but the names of the first, Šarrukin, and the last seven are alone preserved. The fifth dynasty, of Uruk, had five kings ruling 26 years. The scribe adds that this dynasty was succeeded by that of Guti. *Ibid.* 1912, p. 59, the same writer adds that by removing a bit of the clay which fastened part of a mathematical tablet to the place where the names of the second, third, fourth, and fifth kings of Agade had been broken away, he read the first two signs of the name of the fifth king Šar-g[*a*], permitting the restoration Šargani Šarri. The order of kings in this dynasty was, therefore, Šarrukin, . . . Narām Sin, Šargani Šarri; that is, Narām Sin may well have been a

descendant of Šarrukin, as the Babylonian scribes said, but not of Šargani Šarri who ruled after him.

TEL 'ASHAR.—**A New Date from the Kingdom of Khana.**—In *S. Bibl. Arch.* XXXIV, 1912, p. 52, A. H. SAYCE reports a tablet from Tel 'Ashar which reads, "The twentieth day of the month Nin-biri, the year when Kastiliyas the king organized the administration of justice for the second time." The analogy of the Code of Hammurabi would suggest that by this is meant the promulgation of a code of laws. The population of Khana was West-Semitic or Amorite, as is shown by the proper names. Among these that of Isarlim, or Israel, is perhaps the most noticeable.

TIL-BARSIP.—**A Visit to the Mound.**—In *S. Bibl. Arch.* XXXIV, 1912, pp. 66-74 (3 pls.), R. C. THOMPSON reports a visit to the mound of Tel Ahmar, and publishes the Assyrian inscription engraved upon two lions found in this place. This inscription shows that Tel Ahmar was called Kar Šulmanuašarid, the later name of Til-Barsip, given to it by Shalmaneser III. This identification gives us the starting-point for much of the ancient geography of this region. Til-Barsip is frequently mentioned by Shalmaneser III as the place where he crossed the Euphrates.

SYRIA AND PALESTINE

DAMASCUS.—**Discovery of Remains of the Great Temple of the Graeco-Roman Period.**—In *Pal. Ex. Fund.*, XLIV, 1912, pp. 40-45 (3 figs., pl.), J. E. HANAUER reports the discovery of a well-preserved and complete piece of the outer wall of the ancient temple. This fragment is about 50 feet long, and from 27 to 30 feet high. The courses are, on an average, 2 feet 6 inches high, the average length of the stones being 3 feet. Eleven courses, including the topmost, in which are also the pilaster-caps, are now visible, but others will be exposed in a few days when the masonry and débris heaped at the foot of the great wall are removed. Just at the corner are three stones placed one upon another, at the foot of a pilaster. These three stones seem to be *in situ*, and on the topmost is an inscription which mentions the temple-stewards Menodorus and Zenonus. It is dated in the year 349. If this is calculated from B.C. 64, "the date of the granting of independence to the Greek cities in Syria" (*Q.S.* 1911, p. 57) this inscription will belong to the time of Diocletian, whose name perhaps stood at the close of line 6. It seems to have been purposely effaced.

HADJI BEY BEKLI KEUI.—**A Hittite Monument.**—In *Ann. Arch. Antr.* IV, 1912, pp. 120-127 (pl.), J. GARSTANG publishes a royal Hittite monument found by him at Hadji Bey Bekli Keui, near Marash in Northern Syria. It probably came from Choban Tepe. It is a slab of dolerite 1.20 m., by 0.66 m., by 0.34 m. Upon it in relief is a man in Hittite dress holding up a hare in his outstretched left hand, and with his right clutching a triangular-shaped bow which rests upon his shoulder. His royal rank is denoted by a winged rosette above his head. He was standing upon the back of a short-tailed animal. The monument dates from the ninth century.

HEREIBEH.—**A New Minaean Inscription.**—In *Rev. Bibl.* XIX, 1912, pp. 80-85 (2 figs.), A. JAUSSEN and R. SAVIGNAC describe a singular tomb at Hereibeh near El-Ela, bearing two lions sculptured in high relief,

facing straight forward. A Minaean inscription carved upon this monument states that it was built by Hâni, son of Wahab'il, as an atonement for the sins he had committed.

JERUSALEM. — **The Search for the Temple Treasure.** — In *Mitt. Pal.* V, 1911, pp. 56-61, and *Pal. Ex. Fund.*, XLIV, 1912, pp. 35-39, G. DALMAN describes the recent efforts of a party of wealthy Englishmen, on the basis of a supposed cipher, to discover the hidden treasures of David and of the Temple. The work was begun by opening the natural shaft in the rock, originally discovered by Captain Warren, near the Virgin's Fountain, at the foot of the Eastern Hill of Jerusalem, and they explored it thoroughly without finding anything remarkable. The Fountain was carefully examined, and the well-known rock-tunnel, made by King Hezekiah, was cleared out, when it was found that this tunnel was considerably higher than was supposed. A parallel tunnel was found which led back, on the east side, to the Fountain. A tunnel was opened in the direction of the Haram enclosure. The foundations of an old city-wall were met with on the hill, in which there was a gate with a paved street. In the first week of April, 1911, the work south of the Haram enclosure was stopped, and recommenced within the enclosure, where it was carried on, during the night, for nine days, with the attendance of the police. It is said that a guardian at the Gate of the Moors of the Haram enclosure, who had been insufficiently bribed, betrayed the secret, and the work had to be stopped on April 12. The Englishmen went off at once to Jaffa, where their yacht was waiting for them, but the English dragoman was put in prison, and also the Head Sheikh of the Haram, who had received the Prussian Order of the Crown and a ring from the German Emperor and his two sons. The treasure-hunt has failed, but the following unfortunate results remain: The people of Palestine have been confirmed in their belief that archaeological researches are really treasure-hunts. The Moslems have come to the conclusion, which it will be difficult to remove, that one of their holiest places has been pillaged by the Christians. The confidence of the Turkish Government in exploration societies, that they will not secretly do that which is unlawful, has been shaken. The Sacred Rock in the Haram enclosure has been made inaccessible to visitors, and every step of Europeans in the vicinity of it is carefully watched. (See also the articles of C. WARREN on the 'Results of the Excavations on the Hill of Ophel,' *Pal. Ex. Fund.* XLIV, 1912, pp. 68-74; of E. W. G. MASTERTON on 'Recent Excavations in Jerusalem,' *Bibl. World*, XXXIX, pp. 295-306; and of H. VINCENT, *Rev. Bibl.* XIX, 1912, pp. 86-111; 5 pls.; 4 figs.)

PLAIN OF REPHAIM. — **Palaeolithic Implements.** — Mr. Herbert Clark, of Jerusalem, has forwarded to England a number of photographs of specimens from his great collection of flint implements. The first series was placed by the Committee of the Palestine Exploration Fund in the hands of the Royal Anthropological Institute. The second series is now published by R. A. S. MACALISTER, *Pal. Ex. Fund.*, XLIV, 1912, pp. 82-84 (3 pls.). The principal source of supply drawn upon by Mr. Clark is the great palaeolithic "floor" of the Plain of Rephaim, south of Jerusalem, where many hundreds of chipped flints have been collected.

SAKHTJE GEUZI. — **Recent Excavations.** — During his last campaign at Sakhtje Geuzi, Dr. Garstang almost completed his exploration of

the site. In addition to the temple he found several Hittite houses. Furthermore, by a system of sectional cuttings he proved that the strata dated from the eighteenth and twenty-sixth Egyptian dynasties respectively, thus establishing a base for Hittite chronology. He was helped in this by the discovery of Egyptian pottery and seals. Some figures in Phrygian caps were also found which seem to refer to the worship of Mithra. (*Athen.* March 16, 1912, p. 319.)

ASIA MINOR

A NEW MAP OF WESTERN ASIA MINOR.—The first two sheets of a new map of Western Asia Minor were shown to the Berlin Archaeological Society at their February (1911) meeting and highly praised by Fr. Hiller v. Gärtringen. They are the work of Professor Alfred Philippson of Bonn, a pupil of Kiepert and a man unusually qualified by nature and training for such a task. The map is published by J. Perthes of Gotha. These two sheets comprehend the most interesting part of the country, from the Sea of Marmora to the mouth of the Maeander, *i.e.* the Aeolic and the greater part of the Ionic coast, with the islands of Lesbos and Chios. (*Arch. Anz.* 1912, cols. 32-33.)

COS.—**Two Hoards of Coins.**—Two hoards of coins have been found at Cos, the first of twenty-one third-century drachmas, all of the series *B.M.C.*, 76/83; the second, of ten third-century copper coins of the types *B.M.C.*, 103/110. Both are described in detail by J. GRAFTON MILNE (*Num. Chron.* 1912, pp. 14-20), who is inclined on grounds of style to think the date (190-166 B.C.) usually assigned to drachmas represented in the first hoard too late.

LATMOS.—**Hellenistic Fortifications.**—A German architect, F. Krischen, spent three weeks in the fall of 1909 studying the ruins of Heracleia on the island of Latmos, which appear to be of importance for our knowledge of Hellenistic fortifications. His results are published in part as a dissertation for the University of Greifswald and will appear more fully in the large publication of the excavations of Miletus and Didyma. (*Arch. Anz.* 1912, cols. 52-53.)

LYDIA.—**An Epigraphic Journey.**—In *Klio*, XII, 1912, pp. 258-259, A. v. PREMERSTEIN reports briefly upon an epigraphic journey undertaken by him together with J. Keil in Lydia from May to July, 1911. Two hundred and twenty unedited inscriptions were found including three in the old Lydian alphabet.

GREECE

ATHENS.—**Recent Discoveries.**—In *'Apx. 'Eph.* 1911, pp. 246-256 (33 figs.), K. KOUROUNIOTES reports minor discoveries of antiquities in various places in Athens and vicinity. Of chief interest are graves excavated by the writer at Old Phaleron, in which were found many vases of the geometric, Phaleron, proto-Attic and proto-Corinthian styles. One geometric sherd represents a bireme. A fragment of a beautiful grave stele of the fourth century, confiscated in Piraeus, has a semicircular top upon which are depicted a siren between two mourning women. *Ibid.* pp. 257-261 (8 figs.), A. D. KERAMOPOULOS reports, among other things, upon the

discovery of a portion of the ancient wall of Athens, south of the eastern end of the Acropolis, which is perhaps part of the Diomean gate, and upon the excavation of a Roman peristyle near the Lysicrates monument. The two Ionic columns that projected above the modern ground-level formed part of the western side of the peristyle, within which was a tank or cistern. Among the finds were two fragmentary inscriptions, a votive relief, and a few fragments of sculpture.

CHALCIS. — **Inscriptions.** — In 'Αρχ. Εφ. 1911, p. 83, G. A. PAPAVASILEIOU publishes eleven short inscriptions from Chalcis.

DELOS. — **Excavations in 1910.** — In *C. R. Acad. Insc.* 1911, pp. 845-877 (8 figs.), M. HOLLEAUX reports upon the excavations at Delos in 1910. East of the lake the ground was swampy and no buildings were erected there before Graeco-Roman times. A road was followed for 80 m. and remains of a number of buildings found, one of which was probably a palaestra. In one of the rooms were many pieces of painted stucco forming a frieze, of which about 1.20 m. was put together, representing winged Nikes engaged in a chariot race. On the west side of the lake was a wall to protect the Terrace of Lions. North of the lake an *abaton* was discovered, the third to be found at Delos. About thirty inscriptions were brought to light during the year, including a sculptor's signature, Τυμέας Δημέον 'Ηρακλεώτης ἔτορεν. Another mentions games called *Athenaea*. Many fragments of sculpture were found belonging to the Apollos and to the lions previously known, as well as a number of marbles of Hellenistic date, including figures of Hermes, heads of children, a nude male torso of life size, and several statuettes. A colossal head of terra-cotta (Zeus?) badly broken and a number of vases, some with reliefs, were also found. Coins were discovered in abundance, among them many Attic tetradrachms with magistrates' names of the new style. The wall of Triarius (built in 69 B.C.) was also explored. It was from 2.75 m. to 2.80 m. thick with bastions at unequal distances.

Discoveries in 1911. — In *C. R. Acad. Insc.* 1911, pp. 626-650, T. HOMOLLE reports upon the work of the French archaeological schools in Athens and Rome in 1910-1911. At Delos in 1911, beneath the sanctuary of the foreign gods a temple of Hera was found and a great number of fine vases. Below the temple was a canal to the Isopus. In the gymnasium several important inscriptions were discovered including a list of gymnasarchs for a period of sixty years after 166 B.C., "ἀφ' οὗ ὁ δῆμος ὁ Πορναῖον διεκτήσατο τὴν νῆσον." Another inscription perfectly preserved is a decree authorizing the opening of a temple of Sarapis in the island.

DELPHI. — **Recent Discoveries.** — In *Berl. Phil. W.* February 3, 1912, cols. 156-160, H. POMTOW continues to report his discoveries at Delphi in the fall of 1910 (see *A.J.A.* XVI, pp. 123 ff.). The small building of which remains exist under the "white house" was perhaps the Treasury of Spina, not of Agylla, the existence of which is doubtful. The piece of wall near the Treasury of Corinth probably belonged to the Treasury of Clazomenae as Keramopoulos thought. Many dedicatory inscriptions were recut in the fourth century B.C. The golden chariot of the Rhodians stood on a base of St. Elias stone (gray limestone) about 4½ m. wide and 5½ m. long. Two fragments of the dedicatory inscription still exist. He agrees with Bulle that the temenos of Neoptolemus is to be located in a square north of the

retaining wall of the temple. (*Ibid.* February 10, 1912, cols. 187-190.) Northeast of the Treasury of Acanthus, Attalus I erected a colonnade about 200 B.C. It was about 32.70 m. long and 9.30 m. deep and sufficient fragments remain to permit a reconstruction. (*Ibid.* February 17, 1912, cols. 219-224; 2 figs.) There are also enough fragments of the Theban treasury to permit a reconstruction. (*Ibid.* February 24, 1912, cols. 251-255; 3 figs.) The Apollo Sitalcas, 35 cubits high (Paus. X, 15, 1), stood on the pavement west of the offering of Gelo and Hiero. (*Ibid.* March 2, 1912, cols. 284-288; fig.) He attempts a restoration of the monument of Timareta, consisting of two columns supporting statues of her father and mother, her son and herself. (*Ibid.* March 9, 1912, cols. 315-319; fig.) By the help of two inscriptions (Inv. Nos. 3875 and 1857), he reconstructs the genealogy of the family thus: Timolaus, Aretus, Timolaus, Timareta, Timolaus. (*Ibid.* March 16, 1912, cols. 347-352; 2 figs.) The slabs of the base are still *in situ*. Near by were four high bases supporting two equestrian statues of Eumenes II, one of Prusias II, and one of Aemilius Paulus. The last mentioned is not correctly restored in the museum. It stood on a three-stepped base. The statues of Nicomedes III and Laodice stood near the monument of Prusias, of which he attempts a restoration. (*Ibid.* March 30, 1912, cols. 408-414; 3 figs.) The decrees relating to these and other statues in the vicinity are discussed and the dates of their erection established. (*Ibid.* April 6, 1912, cols. 442-448; fig.) The offering of the Orneatae representing a procession (Paus. X, 18, 5) probably stood on the south side of the temple platform upon the blocks which have parallel rows of footprints. He discusses the base of the statue of Xanthippus. (*Ibid.* April 13, 1912, cols. 475-480; fig.) The latter freed Elatea in 301 and again probably in 285. A large limestone block with a colossal round footprint and the letters ΛΛΩΝΙΦ formed part of the base of the lion of Elatea. A restoration of the monument is attempted. (*Ibid.* April 20, 1912, cols. 506-511; fig.) The monument of the Aetolian generals mentioned by Pausanias (X, 18, 7) was a large one with seven or eight figures. Near it was the bull of Carystus, of which part of the base is preserved. Another large Aetolian monument lay about 50 m. west of the temple. It was of the same date as that of the Aetolian generals, and consisted of statues of the dedicator, whose name is not known, her parents, two or three brothers, and perhaps her son. (*Ibid.* April 27, 1912, cols. 539-544.) Near this monument stood the offering of the people of Hermione, of which part of the base is preserved. (*Ibid.* May 4, 1912, cols. 573-576.) This dates from the middle of the fifth century B.C.; and near it was the offering of Peparethus, with a dedication thus restored by Hiller:

Διοπείθες ἐποίεσσεν Ἀθεναῖο[ς].
Νᾶε δύο Καρὸν Πεπαρίθια [αἰχμῇ ἡ] λόντες
ἐποιεῖ[ν] δεκάτεν λεκαταβόλαι Ἀπόλλονι.

The cuttings on the top of the base show that it consisted of a colossal bronze Apollo, about 9 cubits high, with a small doe standing on its hind legs beside him. (*Ibid.* May 11, 1912, cols. 603-608; 2 figs.) The forms of the clamps used by the masons of Delphi do not agree with those in use at Athens at the same time. The swallow-tail clamp was not used after 500 B.C. The Z form, appearing also with the variant |—|, is found all

through the fifth century. The U form began about 400 B.C. and lasted down into the second century. A variation in the shape of a wedge was in use in the third and second centuries. The double T form was used at all periods. (*Ibid.* May 18, 1912, cols. 636-640.) In *R. Et. Gr.* XXV, 1912, pp. 12-23, E. BOURGUET reports upon his investigations at Delphi in 1911. The remains of a semicircular structure of brick between the Treasury of the Athenians and the polygonal wall belonged to an exedra dedicated by Herodes Atticus. Near the rock of the Sibyl is the base of a monument of the Boeotians to which belong six blocks of stone in the museum. The Treasury of the Corinthians lay east of the Stoa of the Athenians, and was 13 m. by 6.50 m. in size. South of the terrace upon which stood the base of the chariot of the Rhodians was probably the third offering of the Phocians. The wall with hammered inscription which Pomtow believed to be the site of this monument must be assigned to the offering of the Tarentines. He would locate between the base of the Rhodians and the east wall of the temenos the monument of Charixenus. The two foundations east of Gate D perhaps supported statues of Attalus I and Eumenes II.

ELATEA. — **A Prehistoric Site.** — G. Soteriades, who has for some time been excavating near Elatea, has discovered upon a rising piece of ground an entire prehistoric village. The character of the objects unearthed shows that this site was inhabited from very early times. In the lowest stratum were found finely polished implements of stone together with various articles of bronze, indicating that the period represented was a transition stage from the age of stone to that of bronze. The bronze articles bear a strong resemblance to those of the Early Minoan period in Crete. In the next stratum the deposits belonged exclusively to the Bronze Age. In this period the place had been occupied by stone buildings, and among the remains of these were found numerous fragments of vases, which had been decorated with a coating of black color on which were painted geometrical designs in white. The uppermost stratum contained objects synchronous with the Late Minoan period of Crete. (*Nation*, April 4, 1912, pp. 346-347.)

EPIDAURUS. — **Another Side of the Altar of the Twelve Gods.** — In *'Aρχ. Εφ.* 1911, pp. 174-177 (3 figs.), Ch. A. GIAMALIDES publishes a fragment belonging with the fourth century relief, which Kavvadias (*ibid.* 1895, pp. 179-184; Athens Museum, No. 1425), because of the presence of Nike, regarded as the pedestal of a monument recording a victory in the games. The discovery of this second side, upon which are three draped figures, confirms the view of Svoronos, *Νέα ἔργα τῶν ἀρχαίων δημοτικῶν* (1910), pp. 416-423, that the monument was an altar of the Twelve Gods, bearing figures on all four sides.

ERETRIA. — **Inscriptions.** — In *'Aρχ. Εφ.* 1911, pp. 1-38 (2 pls.; 34 figs.), K. KOUROUNIOTES publishes forty-six inscriptions from Eretria, most of which were found near the temple of Apollo Daphnephoros. Among these are: regulations for the letting of contracts for artists, costumers, etc., for the musical and dramatic contests of the Dionysia and Demetria held at Oreus, Chalcis, Eretria, and Carystus; several rolls of citizens of Eretria, one of them containing over nine hundred names; several honorary decrees granting *proxenia*, etc. The foregoing are all dated close to 300 B.C. A decree of the Eretrians on receiving a favorable oracle

from Delphi bears a relief representing Apollo Mousegetes and Artemis on either side of a large omphalos. The remaining inscriptions, some of them archaic, are votive and funereal. One of the tombstones was erected by the Herdsman's Union.

GONNUS. — **Inscriptions.** — In 'Αρχ. Έφ. 1911, pp. 123-128 (fig.), A. S. ARVANITOPOULOS publishes as Part III (I. 'Αρχ. Έφ. 1910, pp. 331-382, 407-8; II. *Revue de Philologie*, 1911, pp. 123 ff., 282 ff.) of his 'Thessalian Inscriptions,' thirteen votive inscriptions from Gonnus (cf. *A.J.A.* XVI, p. 422), most of them found near the temple of Athena Polias upon the acropolis. Of chief interest is a dedication to Athena Polias by an ἀρχίφρονος and ten σύνφρονοι, a body apparently corresponding to the horse patrol, *περιπολοι*, of Athens. This stele, as well as some of the others, once bore a painting.

GYTHEUM. — **A Grave Statue.** — In 'Αρχ. Έφ. 1911, pp. 118-121 (pl.), P. KASTRIOTES publishes a statue of about the first century A.D. found in an ancient cemetery at Pasova near Gytheum. The head is a portrait, but the type of the statue is that of Dionysus. Clusters of grapes wreath the head and a grapevine twines about the tree-trunk support, while a cantharus is held in the right hand and a small panther crouches at the feet. The deceased is thus represented as deified, a custom common in the case of kings and emperors being adopted for an ordinary mortal.

HAGIA TRIADA. — **The Italian Excavations.** — Italian archaeologists have uncovered at Hagia Triada, Crete, a prehistoric town in the middle of which is the Lesser Palace (see *A.J.A.* XVI, p. 121). The oldest portion was in the western part of the area where the buildings had been erected very closely together. Here many domestic utensils were discovered. A small temple was also brought to light having a front supported by three columns similar to those represented upon the panels at Cnossus. (*Nation*, April 11, 1912, p. 374.)

NAXOS. — **A List of Names.** — In *Ath. Mitt.* XXXVI, 1911, pp. 281-284, I. A. NAUPLIOTES and F. HILLER VON GAERTRINGEN give a transcription of a much mutilated list of names each followed by a numeral, found at Naxos, evidently a record of contributions of money.

PATRAS. — **A Mithraic Relief.** — In *R. Hist. Rel.* LXIV, 1911, pp. 179-184 (fig.), C. AVEZOU and C. PICARD publish a relief of Mithra slaying the bull recently found at Patras. It is of imperial Roman date, and is interesting as being the second Mithraic monument found in Greece; the other is a dedication on an altar at the Piraeus. Below the figures is the mutilated inscription [*Soli invic]to milites | . . .]ust | . . .]esarcus.*

THASOS. — **A Shrine of Artemis Polo.** — The discovery of four marble statues in a piece of ground at Osmanieh (Limena) in Thasos, in the early part of 1909, led to an official excavation of the spot and the unearthing of the scanty remains of a shrine to Artemis Polo, which include seven votive statues with portions of their pedestals and six inscriptions. The bases stand against a terrace wall forming the back of what was apparently a hexastyle stoa opening toward the north. The statue of the goddess, which probably stood on the central base, has disappeared, and all the statues but one are headless and otherwise damaged. They are all life size or over life size, draped, female figures of good Hellenistic or Roman work and of familiar types. One, which is missing above the waist, is

welcome as an authentic example of the work of Philiscus the Rhodian, son of Polycharmus (cf. Plin. *N. H.* XXXVI, 34, 35). The epithet of the goddess, Πελά, signifying her virginity, recalls the numerous local names of Artemis on the islands of the Aegean and the reference in Callimachus (*Hym. Art.* 34-38) to these shrines. The names Codis (Κόδης) and Are (Ἄρης) of the women represented, and the title Promystes (leader of the mysti?) on a dedication found in a hitherto unknown sanctuary of Augustus, are also new. (T. MACRIDY, *Jb. Arch. I.* XXVII, 1912, pp. 1-19; 12 figs.)

ITALY

BUCCINO. — **A Fragment of a Vase of Assteas.** — In *Ausonia*, V, 1911, pp. 56-68 (pl.; fig.), E. GABRICI publishes a fragment 16 cm. high of a signed crater of Assteas found at Buccino. In the centre with comic exaggeration stands the Palladium, to which a warrior (Ajax?) is clinging in terror. Cassandra, at the left, seizes him by the helmet; while at the right an aged priestess, torch in hand, hurries away. Above is the inscription ΑΣΣΤΕΑΣ ΕΓΡΑΦΕ. Two other pieces of the lower part of the vase are preserved. The writer adds some observations on the date of South Italian vase painting.

CERRETA. — **Prehistoric Remains.** — Prehistoric remains of the aeneolithic period have been found in a tomb at Cerreto near Stroncone in Umbria. They consist of a triangular dagger of bronze, and a sharp-pointed hatchet of the same material, and seven flint arrowheads. (G. COLINI, *B. Pal. It.* XXXVII, 1911, pp. 63-71; pl.)

ESTE. — **A Pre-Roman Tomb.** — The contents of a pre-Roman tomb at Este are described by A. ALFONSI in *B. Pal. It.* XXXVII, 1911, pp. 125-133 (3 figs.). They represent the Gallic civilization shortly before the advent of the Romans, and consist of cinerary and other vases in clay, including a small amphora; also of a *situla* and its cover in bronze, with other objects in bronze and iron.

FERENTO. — **An Inscription with the Name of Otho.** — Among the inscriptions found in the recent excavations at Ferento is a fragment bearing the name of Otho, and thus confirming, apparently, the statement of Tacitus that this emperor was a native of that city. Abundant remains of baths have been uncovered, while the excavation of the theatre has been less fruitful in objects of interest. (L. CANTARELLI, *B. Com. Rom.* XXXIX, 1911, pp. 283-285.)

GNATHIA. — **Frescoes.** — The frescoes of a tomb at Gnathia, in southern Apulia, are discussed in *Röm. Mitt.* XXVII, 1912, pp. 100-123 (pl.; 3 figs.), by R. PAGENSTECHER. They date apparently from the early part of the second century B.C.

NAPLES. — **A Hellenistic Tomb.** — In *Röm. Mitt.* XXVII, 1912, pp. 148-161 (6 figs.), E. GABRICI publishes the results of the excavation of a Hellenistic tomb near S. Maria la Nuova, in Naples, at a depth of 9-11 metres below the street level. The frescoes were very simple.

OSTIA. — **Recent Excavations.** — Excavations at Ostia (see *A.J.A.* XVI, p. 130) have been continued with vigor. An extensive cemetery situated outside the city walls has been partly explored. In the sand beneath the tombs cremation burials of the third century B.C. have been found.

Many of the public buildings of the town have been completely cleared and the intervening spaces explored, so that the most important quarter of the city now forms a connected whole. The baths which were excavated in 1888 have been further examined, and their beautiful mosaic pavements with marine scenes in black on a white ground have been brought to light. Under the palaestra adjoining these baths a large reservoir has been discovered. Moreover, the barracks of the *vigiles* have been completely excavated, as well as the quarter behind the theatre, where remains of a Christian church were found, which was probably erected in honor of Quiriacus, the first bishop of Ostia (268-270 A.D.), but at least three centuries after his death. The foundation of the city of Ostia, which is now under exploration, is to be connected with the Ostian quaestorship in 266 B.C., since no trace of anything earlier has been discovered on the site. (*Nation*, January 25, 1912, p. 94.)

ROME. — **Discoveries near Monte Testaccio.** — Recent excavations for foundations near the Monte Testaccio have led to the discovery of a strong-box which had been destroyed by fire, so that many of the coins it contained were fused together. Some 770, however, have been identified. They range from Antoninus Pius to the time of Gallienus. The buildings laid bare by these excavations were granaries. Many fragments of jars, and marble and terra-cotta decorations have been found along with some inscriptions. (G. MANCINI, *B. Com. Rom.* XXXIX, 1911, pp. 246-260.)

SAN PIETRO MONTAGNON. — **Pre-Roman Remains.** — In excavations near a bathing establishment at the hot springs of San Pietro Montagnon, near Padua, strata of votive objects belonging to pre-Roman times have been uncovered. Besides an enormous number of cups and saucers of small size, there are some objects in bronze, — human figures, horses, rings, etc. (G. PELLEGRINI, *B. Pal. It.* XXXVII, 1911, pp. 119-124, pl.; fig.)

SPAIN

JAEN. — **Find of Coins and Ornaments.** — The province of Jaen in the northern part of Andalusia has yielded at least five important finds of Roman coins that have already been published, and three others not yet published. The first of this last group was made in 1907 not far from Santa Elena, and consisted of about 972 silver and copper coins of the second and third centuries of our era. The second came to light in 1896, at the mine of Centenillo, and was made up of about 181 republican coins. The third, which is now described by G. F. HILL and HORACE W. SANDERS in *Num. Chron.* 1912, pp. 63-69 (2 figs.), was made in June, 1911, about four kilometres to the northwest of the same mine. It consisted of one victoriatus and 74 denarii (of 46 different types), extending in date from about 229 B.C. to 90 B.C. With the coins were found a silver armlet and fragments of a tore, of earrings, and of other ornaments, all of silver, and probably representing a medium of exchange current in the country when the hoard was buried.

FRANCE

LES LONGUES RAIES. — **Excavations in 1911.** — In *B. Soc. Ant. Fr.* 1911, pp. 300-304, O. VAUVILLE reports upon the excavations of E. Langelé in the Gallo-Roman cemetery at Les Longues Raies in 1911 (see

A.J.A. XVI, p. 134). About 150 graves were opened, only one of which showed signs of incineration. A large number of vases of different shapes were found, mostly of a lustrous red color or mottled, but a few were white; twelve glass vases; two mirrors, and a large vase of bronze; a large iron knife and iron nails; objects of bone; a perforated lion's tooth used as an amulet; and 69 Roman coins dating from Augustus to Crispina.

NARBONNE. — **A Satyr with a Bunch of Grapes.** — In *B. Soc. Ant. Fr.* 1911, pp. 194-195 (fig.), A. HÉRON DE VILLEFOSSÉ publishes a Roman intaglio recently found at Narbonne. It represents a young satyr advancing on tiptoe with a bunch of grapes in his extended left hand and a *pedum* or crook in his right. The *nebris* floats out behind. The design was probably taken by the engraver from a group in which the satyr was plaguing some animal.

PARIS. — **Acquisitions of the Louvre in 1911.** — In *B. Soc. Ant. Fr.* 1911, pp. 314-319 (fig.), A. HÉRON DE VILLEFOSSÉ and E. MICHON report the following acquisitions of the Louvre in 1911. 1. A half-draped, marble statuette of the Nile; 2. a Venus standing on one foot, of the type of Venus fastening her sandal, head, left arm and leg, right forearm and part of right leg missing; 3. female head of good style; 4. upper part of a colossal, beardless head from Tyre; 5. so-called head of Berenice, found at the ancient Hermopolis; 6. grave stele, from Athens, representing a nude athlete (head missing) standing and holding a strigil, and beside him a small slave and two rabbits; 7 and 8. two Phrygian reliefs from Eskicheir; 9. a relief of good style representing three girls dancing; 10. a much broken sarcophagus relief with Heracles subduing the Cerynean hind; 11. a small column from Comana inscribed *Αὐτρηλίᾳ Κυρίλλα κυρίῳ Ἀσκληπίῳ* εὐχαρέντι ιεύκα; 12. a Mycenaean lamp, from Camirus; 13. a bronze statuette of Venus standing, from Carthage; 14. bronze bust of a divinity, from Carthage; 15. Roman ring of the time of the Antonines, from Athens, with a bearded head on the seal; 16. an ornate lamp of late date decorated with a beardless head between heads of Silenus and Pan; 17. an alabaster Venus and Eros from Egypt; 18. a right forearm, of bone, entwined with a serpent, and carved with reliefs representing two Chimaeras, a bull, a dog chasing an animal, a tripod, and a goddess holding a flower, from Corinth.

SOS. — **Recent Discoveries.** — In *R. Ét. Anc.* XIV, 1912, pp. 67-71, J. Momméja gives a brief account of the antiquities recently found at Sos (Lot-et-Garonne). These include a terra-cotta head, coins of the colony of Nimes, a spear head, and part of a colonnade probably belonging to a villa. *Ibid.* pp. 72-74, he reports on the ancient iron mines in the vicinity (cf. Caesar, *B. G.* III, 21, 3).

TOULOUSE. — **Early Remains.** — In *B. Soc. Ant. Fr.* 1911, pp. 215-219, L. JOULIN gives the results of his excavations and studies in southwestern France, especially at Old Toulouse. The pre-Roman remains are of two periods. 1. The Early Iron Age (sixth and fifth centuries B.C.), with pottery corresponding to that of Hallstatt. 2. Later Iron Age (fourth, third, and second centuries B.C.), with remains similar to those of La Tène, and imported objects from Greece and Italy. These remains are in part to be attributed to the Tectosages. The cemeteries with Italo-Greek amphorae date from the period of Roman domination.

VILLENEUVE-SAINT-VISTRE. — **Gallic Vases of Gold.** — In *B. Soc. Ant. Fr.* 1911, pp. 203-208 (2 figs.), A. HÉRON DE VILLEFOSSE publishes two gold vases found at Villeneuve-Saint-Vistre (Marne) in February, 1911. They are without handles, and are ornamented with bands, concentric circles, and triangles beaten out from within. The vases are Gallic work of the Bronze Age. The writer also publishes two gold bracelets, two small gold rings, and several circles of gold wire, perhaps bracelets. All of these objects are in a private collection in Paris.

BELGIUM

RECENT DISCOVERIES. — In *B. Mus. Brux.* X, December, 1911, pp. 90-94, A. DE LOË describes several recent discoveries in Belgium. At **Austruvel**, near Antwerp, a second canoe has been found similar to the one found in 1910 (*A.J.A.* XV, p. 427). At **Coxyde** excavations have uncovered important foundations which seem to have belonged to a church. At **Haulchin** the foundations of a Belgo-Roman villa have been excavated. The tiles are inscribed with the name of the maker **HAMSIT**, already known from other sites. A few coins were found, including a denarius of Gordian III (238-243 A.D.). At **Vireux-Wallerand** abundant evidences of iron-working have come to light, as well as pieces of pottery dating from the end of the Iron Age, and from Roman times. Brief descriptions are also given of antiquities at **Maeseyck** and at **Tirlemont**. *Ibid.* XI, February, 1912, pp. 12-14 (2 figs.), the same author describes a stag-horn comb found at **Cesselghem** and now in the museum at Brussels.

GERMANY

ALZEY. — **Recent Excavations.** — The excavations at the Roman fort in Alzey, Hesse, have shown that it differed from other forts found in Germany inasmuch as it was constructed of stone instead of wood and earth. Coins point to 330 A.D. as the date of its erection; and a layer of ashes seems to prove that it was destroyed by fire. (*Athen.* March 16, 1912, p. 319.)

BAD NAUHEIM. — **Prehistoric Graves.** — In *Röm.-Germ. Kb.* V, 1912, pp. 40 f., F. HELMKE reports the finding at Bad Nauheim of twenty-five graves, mostly of the La Tène period, containing the usual objects.

BERLIN. — **An Egyptian Sword.** — The Berlin museum has recently acquired a straight, bronze sword of northern European shape found in Egypt. It is inscribed with the name of Sethos II. It has also acquired an ornamental axe blade on which are two monkeys back to back grasping a lotus stalk. (*Ber. Kunsts.* XXXIII, 1912, cols. 124-126; 3 figs.)

A Neolithic Amphora. — In excavating for the foundations for the new Deutsches Museum in Berlin, an amphora 16½ cm. high and 19 cm. in diameter was found. It is well preserved and has rude incised decoration. It dates from neolithic times. (C. SCHUCHHARDT, *Ber. Kunsts.* XXXIII, 1912, cols. 126-128; 2 figs.)

An Attic Grave Relief. — In *Ber. Kunsts.* XXXIII, 1911, cols. 57-60 (fig.), B. SCHRÖDER publishes an Attic grave relief of great beauty (Fig. 2) recently acquired by the Berlin museum. It represents three bearded male figures. At the left stands a man in a short-sleeved garment which reaches

to the ground, and in front of him are two warriors wearing the chiton and pileus and carrying round shields, bidding each other farewell. Above are the names Sosias and Cephisodorus. There are traces of a painted pattern



FIGURE 2.—ATTIC GRAVE RELIEF IN BERLIN.

on the moulding. The relief was set into a base. It dates from the end of the fifth century B.C.

BETTELDORF.—**Roman Coins.**—The museum of Trèves has acquired a hoard of coins recently found near Betteldorf. The greater part consists of Trèves coinage of the period of Constantine I and Crispus. (*Röm.-Germ. Kb.* V, 1912, pp. 9 f.)

KEMPTEN.—**Sigilla Bowl.**—In *Röm.-Germ. Kb.* V, 1912, pp. 1 f., P. REINECKE reports the finding, during the excavations in Cambodunum

(near Kempten), of a sigilla bowl with the legend *Cibisus fec(it)*. From the fact that among the decorations are several impressions from a coin of Marcus Aurelius, Reinecke concludes that the date usually assigned to Cibisus (110-125 A.D.) is too early, since the bowl evidently dates from 170 or later. In a rejoinder, *ibid.* pp. 44 ff., R. FORRER states his grounds for believing the bowl in question to be the work of a successor of Cibisus, who used his stamp.

KÖNGEN. — **Jupiter Column and Altar.** — Fragments of a Jupiter column have recently been found near KÖNGEN. A quadrangular block has Victoria, Diana, and Apollo in relief, the fourth side bears an inscription. Other fragments include a torso of a man with flying cloak, evidently Jupiter riding over a fallen giant. Nearby an altar stone with inscription was found, dedicated by the same Aelius Victor who erected the monument to Jupiter. (*Röm.-Germ. Kb.* V, 1912, pp. 8 ff.)

METZ. — **Bronze Utensils.** — In *B. Soc. Ant. Fr.* 1911, pp. 224-225, A. HÉRON DE VILLEFOSSE reports that five bronze vessels of Roman date were recently found in the vicinity of Metz.

ÖBER-GROMBACH. — **Roman Settlement.** — Remains of a Roman settlement have recently been unearthed near Ober-Grombach, — a *villa rustica* with several outbuildings. Unfortunately very little beyond part of the foundation walls remains. (E. WAGNER, *Röm.-Germ. Kb.* V, 1912, pp. 35 ff.)

OEHRINGEN. — **A Roman Aqueduct.** — Five altar stones have recently been unearthed near Oehringen, on the site of the Roman praetorium. The inscriptions (three of them datable, 187, 231, and 241 A.D., respectively) refer to the building of an aqueduct. A full discussion was promised, to be published in the *Fundberichte aus Schwaben*, XIX, 1911. (A. WOLF, *Röm.-Germ. Kb.* V, 1912, pp. 2 ff.)

POSEN. — **Meeting of the Deutsche Philologen und Schulmänner.** — The fifty-first meeting of the Deutsche Philologen und Schulmänner was held at Posen, Prussian Poland, October 3-6, 1911. Among the papers read in the different sections the following may be noted: A. Frickenhaus, on the Athenian carnival, maintained that the procession ending with Dionysus riding on a boat-wagon, which is found on vases, represents the Greater Dionysia. A. Brueckner described recent excavations of the Greek Archaeological Society in the cemetery of the Ceramicus. In front of the cemetery lay the enclosure of the *Tritopatreis* (see *A.J.A.* XVI, p. 122), or ancestors of the third and earlier generations back, where the rites were celebrated for those whose graves had been covered up by a regrading of the burial ground to make room for a new set of graves on a higher level. This change of level was made about once in a century, and was done without disturbing the old burials. E. Borrmann spoke on the archaeological part of the Jubilee celebration in Rome, as virtually a celebration of the ancient world-supremacy of Rome, and of Augustus in particular as the real founder of the Imperium Romanum. He showed an inscribed base representing the taking of the *auguria salutis populi Romani*, or *auguria augusta*, from which the emperor received his title of Augustus; and suggested that the Sacred Year celebrated by Pope Boniface VIII, in 1300, commemorated not the Jewish Jubilee Year, but the Roman Secular Festival. C. Schuchhardt discussed the development and spread of a pre-

historic Suebian middle-bronze-age culture centring about Lausitz and the southern Mark, and characterized by castle-building and the pottery known as Lausitz ware. Contrary to the recent views, which call this civilization Celtic or Thracian, *i.e.* of southeastern origin, he claimed that it is that of the German Semnones, mentioned by Tacitus (*Ger.* 30) as *vetustissimi nobilissimique Sueborum*, and that it spread to, not from, the southeast, as it did in other directions. He was opposed by Dr. Blume, of Posen. (*Arch. Anz.* 1911, cols. 480-485.)

WOLTERSDORF.—**Prehistoric Discoveries.**—In *Z. Ethn.* XLIII, 1911, pp. 436-501 (30 figs.), H. BUSSE describes axes, hammers, and other implements of stone found at various times and places in the neighborhood of Woltersdorf, and gives a detailed and itemized account of pottery and bronze utensils found in ninety-six graves near the Klein-Schönebecker boundary, not far from his own home. The important types are fully described and illustrated. The finds are attributed to the fourth period of the Bronze Age, 1200-1000 B.C.

AUSTRIA-HUNGARY

MESGES MOUNTAINS.—**The Roman Limes.**—In *Dolgozatok az Erdélyi Nemzeti Múzeum*, III, 1912, pp. 99-127 (12 figs.; map), Á. BUDAY shows as the result of an examination made in the summer of 1911, that there are considerable remains of the Roman *limes* with its protecting towers in the Mesges Mountains, Hungary.

NAGY-SÁNCZ.—**Recent Excavations.**—In *Dolgozatok az Erdélyi Nemzeti Múzeum*, III, 1912, pp. 1-73 (85 figs.), M. ROSKA describes his recent excavations at the *terramare* site of Nagy-Sáncz, Commune of Pécska-Szemlak, Hungary. The objects discovered consist of rude vases and a few implements of bronze which he divides into sixteen groups, according to the level in which they were found. They are now in the museum at Arad, together with other objects from the same site. The earliest of them date back to the beginning of the Bronze Age in Hungary.

GREAT BRITAIN

LONDON.—**Acquisitions of the British Museum in 1910.**—The acquisitions of the British Museum in 1910 in the departments of Egyptian and Assyrian, Greek and Roman, and British and Mediaeval antiquities, are noted in *Arch. Anz.* 1911, cols. 453-464, from the reports of E. A. Wallis Budge, A. H. Smith, and C. H. Read. The following may be mentioned: I. A bronze figure of the god Bast, twenty-sixth dynasty, probably unique; a very fine papyrus roll, the second largest known, written in the hieratic character, and beginning at the right (it is a selection of chapters from the Book of the Dead, prepared by the Theban priests of Aman-Rā for the princess Nesi-Khensu, about 980 B.C.); a stele bearing an early representation of Aman-Rā, god of Thebes, twelfth dynasty; fragments of tablets from Boghazkeui, inscribed in the Khatti language. II. Fourth century Attic gravestone of Aristais; part of the gravestone of Clearete; small Graeco-Roman bust of Pan; colossal decorative head of Dionysus, from Cyprus; a number of limestone figures and some terra-cottas from Tamassa in Cyprus, all of early Cypriote style; a thick, disk-shaped stone stamp, of

Roman imperial date, with intaglio design and inscriptions on both sides; a very perfect and unusual ivory sistrum from Orvieto, an archaic Etruscan work; a late Roman ivory relief of Ganymede from Behnesa (Oxyrhynchus); a large (1½ in.) agate intaglio of Mycenaean date, showing a lioness and deer; a remarkably fine silver seal-handle of early Greek workmanship, in the form of a crouching lion, from Argos; three bronze mirror-case reliefs, a Dionysus and Ariadne, a combat of three men, and a Victory in a two-horse chariot; a statuette of a deer with much elongated proportions, probably early Graeco-Iberian, from Spain; five fibulae, one being a Spanish development of a *La Tène* type; two oblong clay tablets from the Minoan Palace at Cnossus, inscribed in Class B, linear script, with inventories and reckonings; in pottery, twenty-two numbers representing thirty-six pieces, of Cretan, Cypriote, Geometric, Boeotian, Attic, Italian, Roman, and Gallic wares, which include the lecythus with the capture of Silenus at the wine spring, several oenochoae with pictures of children, and a toy loutrophoros with marriage scenes. III. Remains of the Stone, Bronze, and Early Iron Ages in Britain, found in various parts of the island, with similar objects from the Swiss lake-dwellings, Belgium, Spain, Siberia, Asia Minor, Palestine, and Southern Africa; Romano-British objects in marble, bronze, terra-cotta, clay, and various metals.

OXFORD. — *Acquisitions of the Ashmolean Museum in 1910.* — The accessions to the Ashmolean Museum for 1910 are given (in English) from the report of the Keeper, in *Arch. Anz.* 1911, cols. 464–472, under five heads: Egyptian, Prehistoric Mediterranean, Greek, Graeco-Roman and Roman, Romano-British. I. The Egyptian section received rare and valuable objects from the Exploration Fund's work at Abydos, ranging in date from pre-dynastic to Roman times; others from Petrie's excavations at Medum and Memphis, and from the new explorations of Garstang and Sayce at Meroe, in the Anglo-Egyptian Sudan. From Medum came a large slab with a picture in colored plaster inlay, a local technique, and a collection of potters' kilns and accessories of early imperial date, which are of great technological value; from Memphis, a vase in the shape of a locust and some "Ionic" painted ware. The Meroite pottery shows a flourishing barbaric industry, while the finer objects "represent a native art working on debased Egyptian models under some slight Hellenistic influence." II. From Cnossus, Dr. Evans gave fifteen clay labels and tablets, inscribed in the hieroglyphic and linear scripts, and a number of seal-stones with different stages of pictographic writing, the whole forming a nearly complete series of Cretan scripts. Other acquisitions are: a fine set of bronze tools from Cnossus, a gold ring bezel from the Aegean, showing two typical Achaean warriors in combat; a very primitive seated-goddess figurine from western Asia Minor, and various specimens of pottery and sherds, terracottas, etc., including a collection of clay vessels of Jewish fabrique, from Lachish. III. The Greek section possesses two inscriptions in Cypriot script, which have lately been recognized as containing a new language with Sanscrit affinities, possibly an early Aegean tongue; also a number of clay figurines and heads; two marble votive figures of uncertain date, possibly charms against the Evil Eye; a painted Corinthian shell rhyton; a rare *κουροτρόφος* figurine in ivory; and an early Ionian stamped plaque of electrum with bull-design. IV. A collection of vases and fragments of Cam-

panian black-slip ware from southern Italy, an important collection of glass, terra-cottas, bronze and gold objects, etc., from Kertch, southern Russia, and some clay lamps from Carthage, may be mentioned. V. Two new pieces of inscribed Samian ware from the series found at Herne Bay, Kent, sherds from Holton, Oxon., and a cinerary urn from Woodstock are noted.

AFRICA

BULLA REGIA. — Recent Excavations. — In *C. R. Acad. Insc.* 1911, pp. 595-603, Dr. CARTON reports upon the excavations of Bulla Regia since October, 1910. The clearing of the great hall in the public baths was continued, and it was found to be remarkable both for the state of preservation of its walls and for the manner in which it had been fitted out. It was 15.50 m. by 11 m. with a fine mosaic on the floor. Further excavations in the house discovered in 1910 indicate that it had an *atrium* into which opened a *tablinum* with two *alae*. It had an elaborate mosaic representing a triumphal procession with Amphitrite riding upon a Triton and a Nereid and escorted by winged figures, dolphins, and other fishes. Later on another mosaic was found representing Perseus rescuing Andromeda.

CARTHAGE. — An Inscribed Gem. — In *B. Soc. Ant. Fr.* 1911, pp. 249-250, P. MONCEAUX publishes a partly broken agate cameo recently found at Carthage. It is inscribed λέγο[νοι] | ἡ θέλο[νοι], | λεγέτωσ[αν]. | οὐ μέλ(ε)ι μο[ι]. | σύ, φίλ(ε)ι με, | συνφέρ(ε)ι σοι.

UNITED STATES

NEW YORK. — Acquisitions of the Metropolitan Museum. — The Metropolitan Museum has recently received as a gift from J. P. Morgan an Assyrian sword (Fig. 3), the only specimen of the primitive bronze

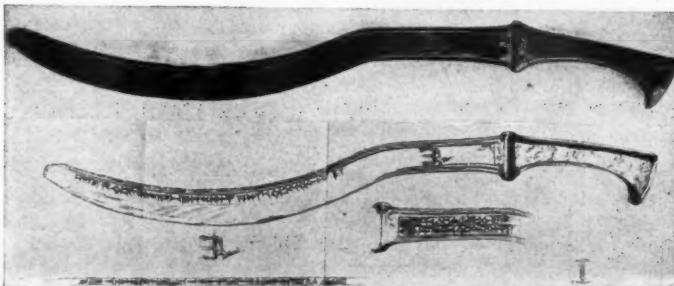


FIGURE 3.—ASSYRIAN SWORD IN NEW YORK.

Sa-pa-ra known to exist. It was at one time exhibited in the British Museum. It is 20 in. long and resembles the Malayan bolo. It has upon it in cuneiform characters the inscription thrice repeated: "The Palace of Vul-niari, King of Nations, son of Budil, King of Assyria, son of Belnirai, King of Assyria." (B. D., *B. Metr. Mus.* VII, 1912, pp. 3-4; 3 figs.) It

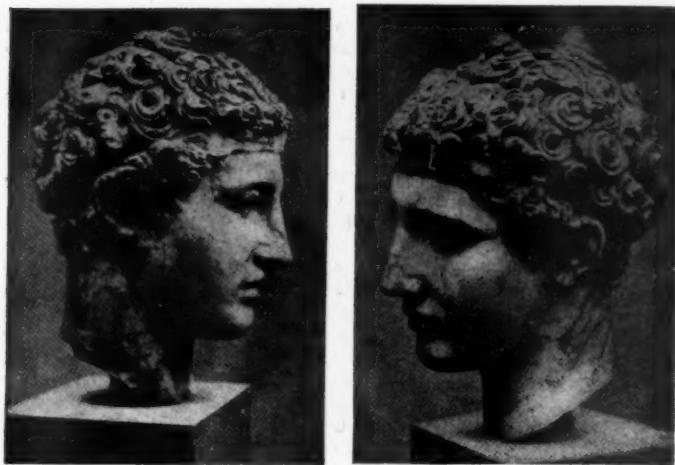


FIGURE 4.—HEAD OF AN ATHLETE IN NEW YORK.



FIGURE 5.—EARLY ATTIC VASE IN NEW YORK.

has also acquired a fine head of an athlete of fifth century date (Fig. 4). This is a copy of the same original as the Petworth head, which Furtwängler (*Meisterwerke*, pl. XVI) assigned to Cresilas. It is a recent discovery. (E. R., *ibid.* pp. 47-49; 3 figs.) Another acquisition is a proto-Attic amphora, 1.085 m. high, adorned with three scenes (Fig. 5). On the neck is a lion attacking a deer; on the shoulder two grazing animals, perhaps horses; and on the body of the vase Heracles attacking Nessus. Behind Heracles is Deianeira seated in a chariot. (G. M. A. R., *ibid.* pp. 68-71; 2 figs.) Among other objects recently received are: the head of a boy in black basalt, height 31.8 cm., of early imperial date; the head of a Muse of fourth century type; a fragmentary head of a girl from Athens, of Roman date; an Apulian amphora with scroll handles, 1.085 m. high (published in *Mon. dell' Inst.* VI, 1860, pl. XLII B); portion of a cylix in which the figure has been outlined, but the background not filled in; a prochous of geometric date; a red-figured hydria; a white lecythus; a terra-cotta mould for the lower part of a small male figure; a terra-cotta head of the archaic period slightly under life-size; a life-size head of a youth of terra-cotta; also a fragmentary figure of an old woman; ten ancient gems, of which two are Mycenaean; also the contents of three tombs at Tarentum, of third century date. (G. M. A. R., *ibid.* pp. 93-98; 6 figs.) The Museum has also received reproductions of some of the frescoes from Tiryns. (G. M. A. R., *ibid.* pp. 116-117; fig.). A. T. CLAY, *ibid.* pp. 72-73, describes three reliefs from the palace of Ashurnasirpal at Nimrud recently lent the Museum by J. P. Morgan. On two of the slabs are winged figures before a sacred tree; on the third the king's armor bearer. They belong to the same series as the reliefs in the British Museum.

EARLY CHRISTIAN, BYZANTINE, MEDIAEVAL, AND RENAISSANCE ART

ITALY

PICTURES BY MICHELANGELO DA CARAVAGGIO. — In *Boll. Arte*, VI, 1912, pp. 1-8, L. VENTURI adds to the *oeuvre* of Caravaggio four pictures: the portrait of Maffeo Barberini in the collection of Princess Anna Corsini, attributed on internal evidence; the Archangel and Tobias, in the church of S. Rufo at Rieti, given to the artist for stylistic reasons; the SS. Quattro Coronati in the church of S. Andrea in Vinclis at Rome, on which the writer has discovered the painter's signature; and a Supper at Emmaus in the collection of the Marchese Patrizio Patrizi in Rome, a picture recorded as painted for that family by Bellori.

MILAN. — **A Portrait of Charles V.** — F. MALAGUZZI-VALERI publishes for the first time in *Gaz. B.-A.* VII, 1912, pp. 237-243, an interesting portrait of the Emperor Charles V, now in a private collection at Milan (Fig. 6). The picture represents the monarch in full imperial regalia, and is so minute in detail that the writer thinks that it must have been done at Bologna at the time of the emperor's coronation. He does not attempt to identify the painter.

RIETI. — **A Picture by Simone Dei Crocefissi.** — In the Villa Potenziani at Rieti is a 'Madonna of Pity' signed SYMON PINXIT HOC



FIGURE 6.—PORTRAIT OF CHARLES V IN MILAN.

OPVS which is one of the few existing paintings of the Bolognese Simone dei Crocefissi. It is published in *Rass. d' Arte*, XII, 1912, p. 47, by U. GNOLI.

A New Giambellini. — U. GNOLI publishes in *Rass. d' Arte*, XI, 1911, p. 177, a Madonna in the Villa Potenziani in Rieti, which he assigns to Giovanni Bellini by reason of close correspondence with authenticated works, like the Correr Pietà and Gethsemane in the National Gallery.

ROME. — **Acquisitions of the Borghese Gallery.** — There have recently been added to the Borghese Gallery a St. Jerome, and a St. Mary of Egypt by Ribera; two views of ruins in Rome by Canaletto; a Madonna by Pompeo Batoni; a Portrait of Himself by G. L. Bernini; a marine landscape by Ruysdael; and an Archangel and Tobias by Savoldo. (P. ACHIARDI, *Boll. Arte*, VI, 1912, pp. 81-93.)

SOMMA LOMBARDO. — **A Picture by Bevilacqua.** — In *Rass. d' Arte*, XII, 1912, pp. 44-46, A. BELLINI publishes a little-known altar-piece in the church of S. Vito at Somma Lombardo. It represents SS. Modesto, Crescenzia, and their son S. Vito adoring the Madonna. The altarpiece, the work of Bevilacqua, pupil of Bergognone, was ordered for the church by Battista Visconti, and must have been painted ca. 1500.

SPAIN

SEVILLE. — **A Painting by Juan de Ruelas.** — A "Miracle of St. Francis Xavier," now in the University church at Seville, is published in *Mh. f. Kunstw.* V, 1912, p. 84, by F. MURILLO Y HERRERA. The picture belongs to the artist's later period.

FRANCE

PARIS. — **Acquisitions of the Louvre.** — The most important recent acquisition of the Louvre is the Redeemer by Giovanni Bellini (MARY L. BERENSON. *Gaz. B.-A.* VII, 1912, pp. 371-376; R. FRY, *Burl. Mag.* XXI, 1912, pp. 10-15). The department of mediaeval sculpture has added a number of important pieces, among them: a fragment from the workshops of Notre-Dame at Paris (XIII century); a St. Michael slaying the dragon, of the twelfth century, from the region of Nevers (stone); an angel in stone relief, of the twelfth century and from one of the southern French schools; a wooden statuette of the Virgin, a Picardy work of ca. 1300; a stone Virgin and Child, Burgundian of the fifteenth century; a Virgin of Pity in stone, of the fifteenth century; a fragment of stone relief, The Entry into Jerusalem, of the fourteenth century; and the tomb-statues of Charles IV and Jeanne d'Evreux, by Hennequin de Liège. (A. MICHEL, *Gaz. B.-A.* VII, 1912, pp. 257-270.)

A Painting by Pietro Alemanno. — The Musée des Arts décoratifs at Paris contains a Madonna signed by Pietro Alemanno, which is described by U. GNOLI in *Rass. d' Arte*, XI, 1911, pp. 206-207. Other paintings by this pupil of Crivelli are noted in the same article as existing in Montefortino in the Marche.

GERMANY

HERRENBREITUNGEN. — **The Excavations.** — An account of the recent excavations in the twelfth century monastic church at Herrenbreit-



FIGURE 7.—YOUTHFUL WORKS BY MARTIN SCHONGAUSER.

tungen is given in *Mh. f. Kunstu.* V, 1912, pp. 177-184, by P. WEBER. Beside many fragments of the Romanesque building, there were found also remains dating in all probability from the Ottonian or even the Carolingian period.

MÜNSTER. — **A Forgery?** — G. PAULI discloses in *Rass. d' Arte*, XII, 1912, p. 19, the interesting fact that the Madonna signed IO. A. BOLTRAFFIUS FECIT 1505, in the Landesmuseum at Münster, is an exact replica of a cut by Dürer dated 1513. This in itself would not militate against the authenticity of the picture, but it has none of the characteristics of Boltraffio, and the group of a mounted king with two attendants in the background is clearly copied from a cut by Lucas of Leyden.

STAUFEN. — **Youthful Works by Martin Schongauer.** — In *Mh. f. Kunstu.* V, 1912, pp. 52-60, F. W. GAERTNER publishes two panels which formed the front and back of a wing formerly part of an altarpiece in an Augustinian monastery in Staufen (Fig. 7). The Christ on the Mount of Olives is so like the engraving of that subject by Schongauer that a common authorship must be supposed for both. A careful analysis of the evidence afforded by the arms represented in the panel of St. Sebastian and St. Arbogast shows that the altarpiece must have been painted for a certain Conrad Haesing of Neuenburg, in the fifties of the fifteenth century. This makes the date of Schongauer's birth about 1435 instead of 1450 as hitherto supposed. The Mount of Olives is still in Staufen, but the panel of the two saints is now in the possession of a collector in Karlsruhe.

AUSTRIA-HUNGARY

VIENNA. — **A New Lorenzo Lotto.** — G. FRIZZONI contributes to the *Jb. Kunsth. Samm.* 1911, pp. 49-57, a discussion of a picture in the Imperial Gallery representing the Christ borne by Cherubim, some of whom support the Cross, and another the eucharistic chalice — the whole denoting an allegory of dogmatic character. The painting's recent restoration has brought out characteristics of Lorenzo Lotto in the picture, and it seems to be the one mentioned in Lotto's account-book, and dated thereby in the year 1543. It also seems to have inspired the relief by Jacopo Sansovino on the door of a ciborium in San Marco at Venice.

Two Decorative Panels by Mantegna. — There are two paintings evidently intended for the decoration of a chamber, representing the Sacrifice of Isaac and David with the head of Goliath in the Imperial Gallery at Vienna, which are unmistakably from the hand of Mantegna. They belong to the last ten years of the master's activity. They are discussed by P. KRISTELLER, *Jb. Kunsth. Samm.* 1911, pp. 29-48.

GREAT BRITAIN

EDINBURGH. — **A New Landscape Artist.** — In *Burl. Mag.* XXI, 1912, pp. 30-35, C. DODGSON reproduces a drawing of a view of the island of Ponza off the coast of Italy signed by an artist, hitherto unknown, by the name of Staynemer. The drawing shows some inaccuracies from the topographical point of view, and it is evident that it formed a study for a Vision of St. John. The name of the artist sounds German,

but his artistic affinities are rather with Bruegel or De Gheyn. The drawing is in the National Gallery of Scotland.

LONDON.—**A New Work by Pol De Limbourg.**—F. WINKLER contributes to *Rep. f. K.* 1912, pp. 536–543, a description of the Breviary of John the Fearless of Burgundy, now in the British Museum. All the miniatures of this manuscript, with a few exceptions, are ascribed by the writer to Pol de Limbourg or his atelier, chiefly on the basis of their resemblance to the *Heures de Chantilly*.

Two New Dürer Drawings.—H. DAVID publishes in *Jb. Preuss. Kunsts.* XXXIII, 1912, pp. 23–30, two hitherto unnoticed drawings in the British Museum. The one represents an elk and is evidently the study for the animal emerging from the forest in Dürer's well-known cut of Adam and Eve. On the back of the leaf on which this animal is drawn, is the sketch of another, a bison. Both drawings are attributed, therefore, to Dürer by the writer.

Leonardo's Drawings for the Bénos Madonna.—The Madonna in the collection of Madame Bénos in St. Petersburg was reproduced in *Burl. Mag.* December, 1911, and has been recognized generally as a youthful work of Leonardo's. In the same periodical, XX, 1912, pp. 230–233, Sir SIDNEY COLVIN comments upon a series of drawings in the British Museum, one of which is practically identical with the St. Petersburg composition except that the Madonna is represented in full length, and the others seem to be preliminary studies for the same picture. On one of these is found a profile of an old man's head which occurs again on the Uffizi drawing dated 1478 and bearing the remark concerning the commencing of the "two Madonnas." The writer is inclined to the view that the Bénos Madonna is one of the two pictures meant.

UNITED STATES

BROOKLYN.—**A Painting by Crivelli.**—F. MASON PERKINS publishes in *Rass. d'Arte*, XI, 1911, p. 207, a panel representing the apostle St. James formerly belonging to Sir C. A. Turner in London, which is now in the collection of Mr. F. L. Fabbott of Brooklyn. The picture is an obvious Crivelli, though almost unknown to students. Other Italian paintings in the same collection are listed in the article.

NEW YORK.—**Byzantine Enamels in J. P. Morgan's Collection.**—In *Burl. Mag.* XXI, 1912, pp. 3–10, 65–73, 127–128, O. M. DALTON describes the collection of Byzantine enamels recently purchased by Mr. J. P. Morgan, formerly known as the Swenigorodskoi collection. The objects described include: an ornamental halo from an ikon of the Virgin; plaques with figures of St. Nicholas and St. Peter, and with ornamental designs; figures of the Virgin and St. John from a Crucifixion; a number of gold earrings and necklaces; the Oppenheim reliquary; a series of gold medallions with figures of saints; and fragments of decoration. The earrings and necklaces are classed by the writer, with some hesitation, as Russo-Byzantine, and dated in the eleventh or twelfth century. The reliquary he considers to be ante-iconoclastic, while most of the other pieces are assigned to the best period of the Byzantine Renaissance.

AMERICAN ARCHAEOLOGY GENERAL AND MISCELLANEOUS

ILLINOIS.—Burial Mounds at Albany, Whiteside Co.—In *Rec. Past*, XI, 1912, pp. 69–81 (7 figs.), WM. BAKER NICKERSON gives an account of the investigation of eight of the group of eighty or ninety mounds situated near Albany, Whiteside Co., Illinois. They appear to have been “the final repository of bodies previously given temporary interment elsewhere, or temporarily exposed on scaffolds, as was customary within the historic period.” The author also believes that similarity in mode of interment justifies the inference that “all were the work of one people, covering a period of several years duration, while similarity in mound structure and disposition of bodies at Portage and East Dubuque indicates a distribution of the same people northward to the Wisconsin line, if not beyond.” A notable feature of these mounds is the general absence of material objects with the dead,—a “monitor pipe,” however, found in one grave, fixes the period of their erection as coeval with that of the Ohio culture. In and beneath Mound 9 there were probably 120 skeletons.

MASSACHUSETTS.—Early Earthworks.—In *Am. Anthr.* N.S. XIII, 1911, pp. 566–576 (7 figs.), C. C. WILLOUGHBY describes and figures certain earthworks in eastern Massachusetts: portion of a circular embankment and trench at Marblehead; remains of a square enclosure near Haggett’s Pond, Andover; embankments and trenches enclosing upland, western shore of South End Pond, Millis, etc. On pages 572–576 citations from early explorers and writers about New England Indian forts, palisades, etc., are given. According to the writer “in all there are about twenty Indian forts mentioned by the early explorers and colonists of New England between the years 1605 and 1676, nearly all of which were in Massachusetts (including the province of Maine) and Connecticut.” These earthworks are all to be attributed to the Algonkian Indians of the country; but “there are indications of the occupancy of eastern and, perhaps, central New England, by a non-pottery-making people, possibly the Beothuk.” He finds, however, no evidence that the Beothuk constructed fortified enclosures of the types known to have been common among the Algonkians; although they did build extensive deer-fences with “half-moon breast works” at intervals.

ONTARIO.—Archaeological Report, 1911.—The *Annual Archaeological Report*, 1911, including 1908–10 (Toronto, 1911, 103 pp.; 150 figs.), issued by Dr. R. B. ORR, the successor of the late Dr. David Boyle as Superintendent of the Provincial Museum, takes up again the record of the archaeological investigations carried on under the auspices of the Museum where they were suspended in 1908. It contains a portrait of Dr. Boyle, with a brief sketch of his life and scientific activities, and treats of field work on the Dorchester Farm, near Queenston Heights, where a unique copper chisel was found, the Murray collection (1800 specimens, mostly from the territory of the Attiawandarons or Neutrals), bird amulets, ceremonial weapons, stone pipes, stone axes, gouge forms; the Smelser-Orr collection (pipes especially); wood and bone (fine specimens of awls, etc.), shell relics (strings of wampum, beads, pendants, etc.). The frontispiece

is a reproduction in colors of the Fort Garry (1869) wampum belt. The list of accessions to the Museum (pp. 93-103) shows for the interval 1908-1911 a gain of 2803 specimens. The countries outside Canada represented by these specimens are the United States, India (Stewart collection illustrating manners and customs of natives of Bengal), West Indies and Guiana, and Chili (Bullock collection of implements, manufactures, etc.).

YUCATAN.—*Ruins of Tuloom.*—In *Am. Anthr. N.S. XIII*, 1911, pp. 539-550 (7 figs.), G. P. HOWE describes a recent visit to the ruined city of Tuloom (Province of Quintana Roo), a site probably not examined by archaeologists since 1840. He gives a general plan, ground-plan of the Castillo, etc. It lies in an area that has had a long period of occupation and was probably the centre of a distinct archaeological province consisting of the coastal area south of Cape Catoche, extending to the Rio Hondo on the borders of British Honduras, including the islands along the coast and reaching some distance inland. Other cities in this area are El Mecco, Tamul, Ina, North Tuloom, Boca Pilar, Bacalar,—besides the ruins on the islands of Cozumel and Mugeres, etc. There are also rumors of large ruins in the interior. At Tuloom there are no high pyramids, and no typically residential buildings, except, perhaps, the "guardhouse." The decoration is comparatively slight; wall-paintings were common, but except in one building are largely obliterated. Threatened Indian attacks prevented more thoroughgoing explorations. The author thinks Tuloom was a city of very early date.

BOLIVIA.—*Ruins at Tiahuanaco.*—In *Proc. Amer. Antq. Soc. N.S. XXI*, 1911, pp. 218-265, A. F. BANDELIER gives the results of his nineteen days stay at Tiahuanaco, where he visited both the ruins themselves and the local museum. The activities of the expedition consisted in surveys of the site, observations on the nature of the country and on native customs, collection of fragments of folk-tales and data from ancient church books, etc. A few specimens were also obtained. The situation, character, condition, etc., of the ruins are described, the questions of construction, transportation, etc., discussed, Indian traditions concerning the ruins mentioned, and some information given about the present Aymará Indians, their sociological organization, dances, etc., with their curious mingling of paganism and Christianity. Dr. Bandelier is of the opinion that Tiahuanaco was built and settled at a very remote period, clear recollection of its builders who may have been Aymará having been lost. The first settlement stood in some relation to the Island of Titicaca. It seems, too, that the original traditions concerning Tiahuanaco are Aymará, not Quechua, folk-lore. In the cutting and construction of these buildings, monoliths, statues, etc., stone tools and implements as well as those of copper (and bronze) were employed. The exactness and perfection of the cutting and joining of the huge stones have, according to Dr. Bandelier, been much exaggerated, the rule of thumb being really most in evidence. A goodly number of the carved blocks are of the Permian sandstone cropping out at Tiahuanaco, and were evidently quarried and prepared on the spot; while the troublesome question of long transportation (wooden rollers and levers seem to have been in use) is considerably reduced by the suggestion of Mr. Sundt, the geologist, that the andesite blocks may be erratic. The nature of the copper clamps used for fastening together some of the stones indicates that the builders were

acquainted with the art of casting. In the absence of definite facts, speculation as to the interpretation of the symbolic art of the carvings, especially the great doorway, is esteemed idle, but the writer observes that "the art of the monoliths of Chavín de Huantar in central eastern Peru seems like an intermediate between the art of Tiahuanaco and that of Copan and Palenque." In *Bol. Soc. Geográf. de la Paz*, IX, 1911, pp. 4-52, A. POSNANSKY treats of Tiahuanaco and the ancient civilization of this region. The author takes the position that all the great pre-Columbian civilizations of Peru, Ecuador, Colombia, Central America, Yucatan and Mexico, "have had their origin in the Andean plateau, where the most primitive beginnings of the American troglodyte are to be seen." He recognizes five stages of Colombian-Andean culture, the last being the period of the Incas. A second edition of this paper has been published in pamphlet form.

WEST INDIES.—**Lucayan Remains on Caicos Island.**—In *Am. Anthr.* N.S. XIV, 1912, pp. 81-105 (pl.; 16 figs.), THEODOOR DE BOY, after some preliminary account of the ancient inhabitants of the Bahamas, gives the results of his recent explorations of caves, mounds, camping grounds, etc., on the island of Providenciales (burned wood, conch-shells, fragments of incised pottery, stone and bone implements, pottery-heads, etc.); the Ambergris Cays, North Caicos Island (besides pottery and a flint hatchet-head, there was found in a cave at Sandy Point a highly polished black flint chisel with cutting edge; fragment of bowl from a cave at Pumpkin Bluff; jadite implement from field at Whitby; pottery, hammer head, etc., from Bottle Creek; stone idol from Kew); Grand Caicos Island (mounds; pottery, stone implements, etc.); and East Caicos Island (caves at Jacksonville, with petroglyphs, carved stones, pottery fragments, stone implements, etc.). Evidences of pre-Columbian habitation have been discovered on a majority of these islands.